THE INDUSTRIAL EDUCATION SURVEY

OF THE CITY OF NEW YORK

Report of the Committee Authorized by the Board of Estimate and Apportionment

I

THE PRINTING TRADE

NEW YORK CITY
1918

THE PRINTING TRADE

THE INDUSTRIAL EDUCATION SURVEY OF THE CITY OF NEW YORK

PART I

THE PRINTING TRADE

THE COMPOSING ROOM
THE PRESSROOM

Report of the Committee Authorized by the Board of Estimate and Apportionment

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1918
NEW YORK CITY

MANHATTAN LINOTYPE CO.
PRINTERS
137-139 E. 25TH ST., N. Y.

THE PRINTING CRAFTS BUILDING

A modern 22-story building with a floor area of 528,000 square feet designed especially for the printing trade.

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FOREWORD

On September 29, 1915, as amended December 15, 1915, the Board of Education requested the Board of Estimate and Apportionment to appropriate $15,000 for the purpose of co-operating with the United States Department of Labor in making an industrial survey for the better guidance of the Board of Education in its extension of industrial education.

The Board of Education was prompted to request funds for the purposes of an industrial survey by the demands of organized labor of the City of New York as expressed in the form of a "Declaration of Principles and Policies of Organized Labor of the City of New York" at a conference held April 20, 1915. This declaration was subsequently officially ratified and endorsed by the following organizations:

New York Central Federated Union; Brooklyn Central Labor Union; Bronx Labor Council; United Hebrew Trades; Allied Printing Trades; United Board of Business Agents of the Building Trades of Manhattan and vicinity; Metal Trades of Greater New York; Men's and Boys' Clothing Trades; Women's Trade Union League; Women's Garment Trades.

This statement which expresses the attitude of organized labor toward the extension of vocational training in the public schools of the city insists that such training shall be based upon and continually modified with reference to the industrial character of the community. The data upon which vocational training is organized must be gathered in the work shops of the city by a systematic and continuous survey which shall embrace the whole range of industrial activity. Upon only the basis of such a survey can instruction be adapted to the industrial needs of the community. "The school authorities must provide that sort of industrial training that employers and wage earners jointly demand."

As a result of these petitions the Comptroller, as Chairman of the Committee on Education of the Board of Estimate and Ap-

portionment, on December 15, 1915, sent a communication to the latter body outlining the plan of similar surveys and containing certain suggestions as to scope and organization and in which he recommended that the request of the Board of Education for $15,000 be sent to the Board of Aldermen with the recommendation that special revenue bonds in the said sum be granted, the proceeds thereof to be used by a general survey committee appointed by His Honor, the Mayor, for the purpose of making an industrial survey under the conditions specified.

This recommendation was approved with the result that the following resolution was adopted by the Board of Aldermen on March 7, 1916, and approved by the Mayor on March 14, 1916:

Resolved, That, in pursuance of the provisions of subdivision 8 of section 188 of the Greater New York Charter, the Board of Estmate be and it is hereby requested to authorize the Comptroller to issue Special Revenue Bonds in the amount of Fifteen thousand dollars ($15,000), the proceeds whereof to be used by a Committee to be appointed by His Honor, the Mayor, for the purpose of making an industrial survey for the better guidance of the Board of Education in its extension of industrial education;

That said Committee be given full power to expend this money in the making of such survey and in directing the same;

That said Committee be composed of twelve (12) members, of whom three shall represent the Board of Education, two shall be employers of labor, two shall be representatives of organized labor, one shall represent the Board of Estimate and Apportionment, one shall represent the Board of Aldermen, one shall represent the National Society for the Promotion of Industrial Education, one shall represent the New York State Department of Labor and one the United States Department of Labor;

That the appropriation of fifteen thousand dollars ($15,000) herein made shall be for one year from the date upon which it becomes available, in order to insure the completion of the survey and the report thereon within twelve (12) months.

On April 7th the Board of Estimate and Apportionment approved the resolutions and added the following:

"and for the purpose of providing means therefor, the Comptroller be and is hereby authorized, pursuant to the provisions of subdivision 8 of section 188 of the Greater New York Charter, to issue special revenue bonds of the City of New York to an amount not exceeding fifteen thousand dollars ($15,000), redeemable from the tax levy of the year succeeding the year of their issue."

The following Committee was appointed by His Honor, the Mayor, on the first of June:

C. R. Richards, Director of Cooper Union, Chairman.

John Martin, Member Board of Education.

*Thomas J. Carroll, Member Board of Education.

William J. Ettinger, Associate Superintendent of Schools.

Miss Florence M. Marshall, Principal, Manhattan Trade School for Girls.

Mrs. Mathilde C. Ford, Secretary, Committee on Education, Board of Estimate and Apportionment.

Charles Delaney, Board of Aldermen.

Royal Meeker, United States Commissioner of Labor Statistics.

George A. Stevens, New York Department of Labor.

Arthur D. Dean, Director, Division of Agricultural and Industrial Education, New York State Education Department.

C. G. Norman, President, Manhattan Fireproof Door Company

Frederick Alfred, President, M. B. Brown Printing and Binding Company.

Emil J. Deering, Business Agent, International Association of Machinists.

John J. Munholland, Pattern Makers' League of North America.

Mrs. Sidney C. Borg, Chairman, Committee on Investigation of Commercial Schools.

The Committee held its first meeting on June 27, 1916. At the second meeting on July 5, Mr. Lewis A. Wilson, Specialist in Industrial Schools of the New York State Department of Education, was appointed as director. Mr. Wilson was granted leave of absence by the department in order to undertake this work. It was decided at a subsequent meeting, on account of the limited time and resources at the disposal of the survey, to confine the industrial studies to the four trades of printing, machine work, inside electrical work and carpentry and joinery, and on the school side to investigate only the four day vocational schools maintained by the city and the evening, part time and co-operative industrial classes then in operation.

In the early fall a field and office staff was appointed and the active work of the survey began in November. The study of the printing trade was made by George Stein (composing room) and Fred F. Moran (press room). The field work of the trade sur-

*Died October 27, 1916.

veys was, for the most part, finished in January, while that of the school survey continued through the month of May.

Early in the progress of the survey employers' organizations and labor unions representative of the four trades under study were invited to appoint committees to confer and co-operate with the director in regard to the conduct of the trade investigations. As a result committees were appointed by the following organizations:

Association of Employing Printers:

William Green, William Green, printers.
G. F. Kalkhoff, President, Kalkhoff Co.
Hiram Sherwood, President, Read Printing Co.
John C. Oswald, Oswald Press, Editor American Printer.
Gustav Zeese, Zeese-Wilkinson Co.
Frederick Alfred, President, M. B. Brown Printing and Binding Co.

New York Master Printers' Association:

Joseph C. Aste, The Aste Press.
William Kiesling, President, Master Printers' Association and President of the Kiesling Co.
William Driscoll, Vice-President, Master Printers' Association and Manager of the Lecouver Press.
Charles Francis, President, Charles Francis Press.
George J. Hurst, Hamilton Press.

Allied Printing Trades Council:

Leon H. Rouse, President, Typographical Union No. 6.
Theodore A. Douglas, Business Agent, Typographical Union No. 6.
Herbert F. Mulroy, Business Agent, Pressmen's Union No. 51.
E. W. Edwards, Secretary, Allied Printing Trades Council.
Philip Umstadter, President, Pressmen's Union No. 51.

Master Carpenters Association of the City of New York:

Hugh Getty, Hugh Getty, Inc.
W. S. Faddis, Cauldwell-Wingate Co.
William J. Hoe, James C. Hoe's Sons.

Richard Moller, Sloane & Moller, Inc.

R. B. Smith, R. B. Smith & Co.

United Brotherhood of Carpenters and Joiners of New York City:

Charles A. Judge, President and General Agent of United Brotherhood of Carpenters and Joiners of New York City.

John Halkett, Vice-President and General Agent of United Brotherhood of Carpenters and Joiners of New York City.

John Rice, Secretary of the United Brotherhood of Carpenters and Joiners of New York City.

John Towers, Secretary and Treasurer of the Concrete Alliance.

John Donovan, General Agent for the United Brotherhood of Carpenters and Joiners of New York City.

H. Blumenberg, Business Agent of the United Brotherhood of Carpenters and Joiners of New York City.

Independent Electrical Contractors' Association:

Louis Freed, President, Independent Electrical Contractors' Association; Prop. Jandous Elect. Equipment Co., 109 West 31st Street, New York City.

M. H. Bettman, Chairman of Comm.; Prop. Manhattan Elect. Const. Co., 108 West 17th Street, New York City.

William Bleyle, Prop. Bleyle Elect. Co., 84 Cortlandt Street, New York City.

George Brooke, Prop. Manhattan Elect. Maint. Co., 1989 Amsterdam Avenue, New York City.

Electrical Contractors' Association of New York:

L. K. Comstock, L. K. Comstock & Co.

E. J. H. Thiemer, Electrical Engineer and Contractor.

E. J. Murphy, New York & Queens Electric Light and Power Co.

Inside Electrical Workers of Greater New York, International Brotherhood:

William J. Walsh, President of the Inside Electrical Workers of G. N. Y. I. B.

G. W. Whitford, Secretary of the Inside Electrical Workers of G. N. Y. I. B.

Charles DuBourg, Vice-President of the Inside Electrical Workers of G. N. Y. I. B.

Arthur O. Maves, Chairman Examining Board, Inside Electrical Workers of G. N. Y. I. B.

Paul McNally, Business Agent of the Inside Electrical Workers of G. N. Y. I. B.

National Metal Trades Association:

Christopher Cunningham, Christopher Cunningham Co.
F. L. Schmidt, F. L. Schmidt Co.
Paul Pryibil, Paul Pryibil Co.
Charles Ross, C. Ross & Son Co.
Louis Doilling, De La Vergne Machine Co.

International Association of Machinists:

George H. Stilgenbauer, Business Agent and Secretary of Lodge 434.
M. J. Carney, Business Agent.
J. J. McEntree, Business Agent.
C. A. Durbin, Business Agent.
D. Walkins, Proprietor Walkins Garage.

These Committees held frequent conferences with the director during the progress of the survey and gave much helpful advice as to methods of collecting the desired data; later they checked the findings of the trade studies as to accuracy of fact and finally developed recommendations as to educational provisions for the respective trades.

Later in the progress of the survey a number of prominent school men in different parts of the country were invited to serve on advisory committees dealing with special phases of the educational problem. Each of these individuals accepted the invitation tendered with the result that the following Committees were organized:

Administration:

Leonard P. Ayers, Russell Sage Foundation, New York City.
C. A. Prosser, Director Dunwoody Institute, Minneapolis, Minn.
David Snedden, Teachers' College, New York City.

Licensing and Employment of Teachers:

C. A. Prosser, Dunwoody Institute, Minneapolis, Minn.

Arthur D. Dean, State Department of Education, Albany, N. Y.

Samuel S. Edmands, Pratt Institute, Brooklyn, N. Y.

Day Vocational Schools:

Charles R. Allen, State Board of Education, Boston, Mass.

Francis H. Wing, Director Vocational Education, Buffalo, N. Y.

E. E. McNary, Director of Vocational Schools, Springfield, Mass.

L. H. Carris, Assistant Commissioner of Education, Trenton, N. J.

Evening Trade Schools:

L. W. Mathewson, Director Industrial Department, Dickinson High School, Jersey City, N. J.

C. R. Dooley, Principal Casino Technical Evening School, Pittsburg, Pa.

O. B. Furney, Director of Evening Vocational Schools, Albany, N. Y.

Part Time and Co-operative Classes:

R. O. Small, Deputy Commissioner of Education, Boston, Mass.

E. A. Cooley, Director of Continuation Work, Milwaukee, Wis.

M. B. King, Assistant Commissioner of Education, Harrisburg, Pa.

A special advisory committee on provisions for the printing trade was also appointed as follows:

A. L. Williston, Director Wentworth Institute, Boston, Mass.

C. B. Connolly, Director of the School of Trades, Carnegie Institute, Pittsburg, Pa.

Wm. B. Kamprath, Principal Elm Vocational School, Buffalo, N. Y.

When the findings of the trade and school surveys were completed they were submitted to the various advisory committees

which later met in New York City and formulated recommendations within their respective fields.

These recommendations together with the findings as a whole were finally considered by the survey committee and the recommendations formulated which appear in the completed report.

This report the Committee decided to first issue in five parts:

1. The Printing Trade.
2. Inside Electrical Work.
3. Carpentry and Joinery.
4. The Machinist Trade.
5. Industrial Classes in the Public Schools.

THE PRINTING TRADE

DEVELOPMENT OF THE INDUSTRY

While various attempts were made by the Chinese and other Asiatics as early as the sixth century to print from wood engraved blocks, and while books printed from blocks were produced in Europe in the thirteenth and fourteenth centuries, it was not until the production of the 42-line Bible, about 1450, by Johann Gutenberg, of Mainz, Germany, that printing really became a recognized industry.

The press which Gutenberg used was built of wood, after the plan of a wine press. The movable type was cast from lead. A bed, or table, held the type, which was inked by hand, face up. In operating the press a piece of paper was first placed carefully on the type and the bed then moved back under a sliding block, which was forced down by a large hand screw. This action pressed the paper against the type and effected the printing.

Following the work of Gutenberg, only minor improvements were made in the printing press before the nineteenth century, when power was introduced to drive presses. At practically the same time the cylinder press was developed. This press, which made its appearance about 1813, introduced the method of placing the paper on a revolving cylinder and rolling it against the type. Frederick Koenig is credited with being the father of this type of press, since he was the first press builder to advise the use of a method by which the printing bed, or form, moved in unison with the impression cylinder.

From 1850 on, the developments in printing were so rapid as to revolutionize the industry. The cylinder press was followed by the rotary press, in which two cylinders were used, one carrying the paper and the other the plates.

In the work of producing newspapers Bullock is credited with being the inventor of the first perfecting press which made a quick production possible. R. Hoe & Company were the first press builders to manufacture another type of newspaper press,

the web rotary, by means of which newspapers were printed from stereotypes at greatly increased speed.

In addition to the rapid strides made in the development of printing presses within the last fifty years, equally important inventions have been made in typesetting machines, in the development of the half tone and other reproductive processes, and in other machines and processes which have served to place printing in the foremost rank of American industries.

Early Printing in New York

Printing was introduced into New York in 1693 by William Bradford, who came to this city from Philadelphia, where also he had had the distinction of being the first printer. Bradford came in an official capacity, as printer to the province, which decreed that "he shall be allowed 40 L. current money of New York per annum for his salary and have the benefit of printing besides what served the publik." That sum, though small today, was also the salary of the surveyor-general, who gave all his time to the province. In printing books and in selling printed stationery, books and paper, Bradford soon became a man of substance, and a vestryman of Trinity Church. He was public printer for forty-eight years, with a subsidy, or salary, which gradually increased to 75 L. His first residence and place of business was in Pearl Street on the site of present Nos. 81 and 83. In 1714 his printing house was on the site of the present Cotton Exchange, and there, in 1725, he printed our first newspaper, the New York Gazette. The New York Historical Society has placed bronze commemorative tablets on both of these sites, an action which is suggestive of the importance of printing to a community, and one which was not bestowed on any other tradesman-citizen of early New York.

When William Bradford died, in 1752, there were three printing houses in New York, carried on by John Peter Zenger, Henry De Forest and William Weyman, the first two of whom had been apprenticed to Bradford. Zenger established the second newspaper in the city, the New York Weekly Journal, in 1726. Its criticisms of the governor were so pointed that Zenger was charged with libel and imprisoned pending trial. Certain issues of his paper were publicly burned by the "common hangman." Zenger thus became the hero of the most important trial which took place in colonial America, in which, after an imprisonment

of thirty-five weeks, he was triumphantly acquitted, the first publisher in history to controvert the legal maxim then prevailing that "the greater the truth the greater the libel." His counsel was presented with the freedom of the city, and Zenger was appointed city printer. A history of the trial was printed in 1735, and editions were issued in both England and America. Thus a printer, taught in New York, was an instrument in first establishing the right of free speech and the liberty of the press. The industry, now fairly established, steadily increased in extent and power. To meet its requirements the first type foundry was started in 1791.

The later development of the printing industry in New York runs parallel with the industrial development of the city. In 1838 the Bruce Typecasting machine, invented in New York, revolutionized typefounding. Some nine years later March Hoe invented the first rapid newspaper printing press, multiplying the impressions ten-fold. About the same time the first electrotyping machinery was constructed in New York. These three great inventions made New York for many years the center of progress in printing. These improvements were adopted in all countries, and for several years America's principal export of manufactures consisted of machinery for printing, typefounding and electrotyping, a business made possible in large part by the local growth of printing and publishing.

In more recent years the enterprise and ability of De Vinne encouraged the wood engravers of New York to attain great eminence in that art, excelling even the European standards; and when the half-tone process of engraving superseded wood engraving, it was again De Vinne, New York's master of typography, who taught the paper makers to make suitable paper and the press builders suitable presses for the new process with the result that for a long period New York printers excelled all others in the use of half-tone engravings.

IMPORTANCE OF THE PRINTING INDUSTRY

The importance assumed by the printed word in the minds of the American people is well shown when we consider the forward strides made by the printing and publishing industry within the

past half century. Fifty years ago printing and publishing in America was in the "infant industry" stage, with an annual output valued at about $40,000,000. Today this figure has been increased to more than $800,000,000 annually.

As printing is naturally a city industry, it follows that our largest cities should lead it. The position, however, which New York has gained is almost startling. Over one-fourth of the printing and publishing produced in the United States in 1914, according to the census, was done in the five boroughs of New York City. Of the various industries of the city, only the clothing industry surpassed it in value of product.

Some idea of the extent of printing and publishing in New York may be gained by again referring to the census figures for the year 1914. The industry represented in that year 2,650 establishments and 68,540 persons. In salaries and wages together there was paid out in that year approximately $76,955,000.* The capital invested totaled $155,587,228, while the value of the combined product of the printing and publishing trade amounted to $215,570,954, *a value reckoned at one-twelfth of the output of the printing and publishing establishments of the world.* Indeed, in the value of output, New York is said to exceed London, heretofore the world's greatest printing city.

The cosmopolitan character of the printing done in New York is shown to the best advantage in newspaper printing. A total of 144 papers printed in 25 foreign languages are issued in this city. More than half the circulation of daily papers printed in foreign languages in the United States is held by publications issued within the borders of New York City. Some idea of the variety of languages in which these newspapers and periodicals are printed may be gained from the following table. Of the various languages enumerated in the table it is to be noted that Jewish leads with a total of 27, being closely followed by Italian, which numbers 23. Periodicals in these two languages constitute 35 per cent. of the total number published.

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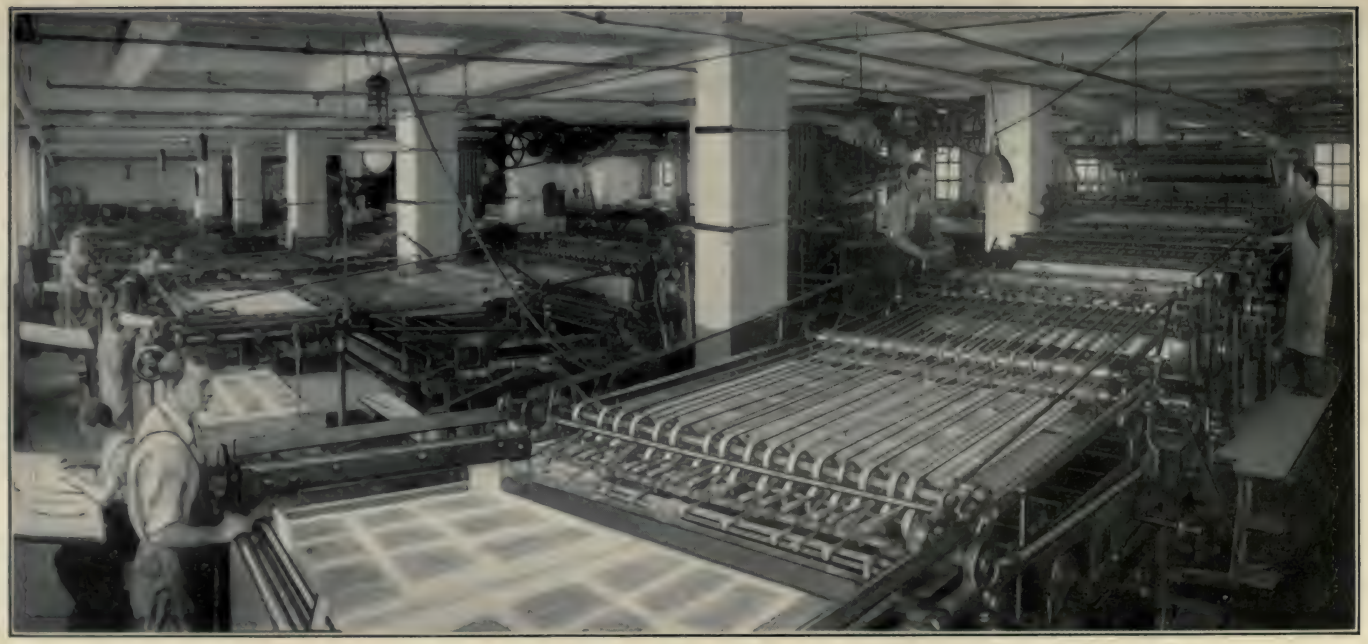
*This includes bookbinding and blank book making, engraving steel and copper plate, plate printing, lithographing, book, job, music, newspaper and periodical printing and publishing.



SECTION OF A LARGE COLOR PRESS ROOM

FOREIGN NEWSPAPERS PUBLISHED IN NEW YORK CITY

	Weekly	Monthly	Daily	Total
Arabic	6	1	2	9
Armenian	1	1	.	2
Bohemian	1	1	2	4
Chinese	3	.	.	3
Croatian	2	1	2	5
Finnish	1	.	.	1
French	.	1	1	2
German	8	2	5	15
Greek	.	.	2	2
Hungarian	7	2	3	12
Italian	11	7	5	23
Japanese	2	.	.	2
Jewish	20	2	5	27
Lettish	1	.	.	1
Lithuanian	3	.	.	3
Norwegian-Danish	2	.	.	2
Persian	1	.	.	1
Polish	3	.	2	5
Roumanian	2	.	.	2
Russian	4	2	3	9
Serbian	1	.	1	2
Slovak	2	.	2	4
Slovenic	1	.	1	2
Spanish	2	1	.	3
Swedish	3	.	.	3
	87	21	36	144

TYPES OF PRINTING ESTABLISHMENTS

According to the census there were 2,650 shops in New York City in 1914 ranging in size from the "one man shop" with its small job press and a few frames of type to the establishment with seventy-five presses, including the latest and fastest two-color presses, and a modern composing room employing 300 hand and machine compositors. The product represents all classes and grades of printing, from the cheapest hand bill or card to the most expensive and elaborate catalogue or book.

These shops may be divided into two major types; the newspaper office, which, through its publication, sells a service to the public in furnishing daily news; and the commercial and job printing establishments, which produce a manufactured article sold in bulk to its patrons. There are also a number of typesetting shops that specialize in setting type. The various types of shops are described in the order of their importance.

Commercial and Job Shops

Over two-thirds of the printing of New York is produced in the commercial and job shops; the commercial shop with hand and machine composing room equipment and cylinder, web and job presses; and the small job shop with only hand type equipment and job presses. The commercial shops print books, magazines and catalogues, while the small job shops usually print hand bills, cards, stationery, booklets, price-lists, etc.

Every kind of printed matter is produced in these shops, such as books, catalogues, trade papers, weekly papers, magazines, business stationery, blanks, forms, advertising literature and advertising novelties, calendars, labels, paper bags, boxes, posters, show cards and badges.

Newspaper Offices

The newspaper offices in New York, with one exception, print only their own publications. From their presses come daily twenty regular newspapers printed in English and thirty-six foreign dailies representing fourteen different languages. These papers have a daily circulation of over 5,000,000 copies. There are also numerous daily publications which are not considered general newspapers, giving market and trade reports and news of a special character.

None of the English dailies is of recent birth; all have been factors in the history and growth of the city and country and are known and read in all parts of the English-speaking world.

The demands upon the daily newspaper for the quick dissemination of news has been the most important factor in the mechanical development of the printing trade. As a result of this demand the typesetting machine was perfected and presses built that deliver an edition of 48,000 twenty-four page papers one hour after the plates are received in the pressroom. This machinery would seem to be all that is humanly possible in the way of accuracy and speed, but experimenters are constantly devising improvements.

Typesetting Shops

There are about 50 shops in New York City which specialize in typesetting. These shops are equipped with modern composing room machinery and set type for printing firms.

SECTION OF MODERN NEWSPAPER COMPOSING ROOM—NEW YORK TIMES

RECENT DEVELOPMENTS IN THE PRINTING TRADE

A new era in the commercial printing industry may be said to have begun with the development of the halftone engraving process. This process provides an inexpensive means of illustrating articles and furnishes a means of graphic advertising for the manufacturer and merchant. On the other hand the development of a new business, that of the professional advertiser, has given an added impulse to commercial printing. The New York City Red Book Telephone Directory gives the names of 745 companies and firms which conduct advertising agencies and it can be readily imagined that the work of these firms tends greatly to increase the volume of printing.

The industry has kept pace with this constantly increasing demand for product. No other industry requires a larger expenditure for machinery in proportion to output, and the increased capital invested in the printing industry during the past five years ($32,442,000) is slightly more than the increased value of the annual product ($32,061,000).

Within the past ten years many commercial structures, especially fitted for the printers' requirements, have been erected in the city, and high speed presses and other modern printing equipments of a kind undreamed of fifteen years ago installed within them. Within the last ten years about twenty reinforced concrete buildings have been erected in the Borough of Manhattan for the occupancy, almost entirely, of the printing and allied trades. These buildings are of an average height of eleven stories, the largest being the Printing Crafts Building, twenty-two stories in height, having a floor area of 528,000 square feet.

CENTRALIZATION OF THE PRINTING INDUSTRY

The center of the printing industry in New York City is located at the lower west side of the Borough of Manhattan, between 25th Street and 43d Street. For many years the printing district was located below 25th Street, but during the past few years it has gradually moved uptown. The center of the trade will in all probability remain where it now is for many years due to the new buildings that have been erected by printers in this district.

Some idea of the centralization of the trade may be gained from the fact that 87 per cent. of the people engaged in the

printing industry in Greater New York work in the Borough of Manhattan. This fact should, of course, influence in a large degree the location of any school offering courses to the workers engaged in the trade.

NUMBER OF COMPOSITORS AND PRESSMEN IN NEW YORK CITY

It is difficult to determine the exact number of workers in the composing and pressrooms of the city. The United States Census report for the year 1914 gives the number of pressmen and compositors in New York City as 24,014. The distribution of these workers in the trade is shown in the following table:

Kind of Work	Males	Females	Total
Compositors and Typesetters	16,606	652	17,258
Proofreaders	478	322	800
Pressmen	2,651	5	2,656
Press Feeders	1,496	351	1,847
Apprentices*	1,370	83	1,453
	22,601	1,413	24,014

The members of the survey staff secured information as to the exact number of compositors and pressmen employed in the daily newspaper offices in the city. The following table shows the distribution by occupations of the 3,706 men employed in these offices:

NUMBER OF WORKERS EMPLOYED IN THE COMPOSING AND PRESS ROOMS OF THE DAILY NEWSPAPERS, PRINTED IN ENGLISH

COMPOSING ROOM		PRESS ROOMS	
Linotype Operators	658	Pressmen	1,040
Handmen	562	Flyboys and Apprentices	439
Proofreaders	199		1,479
Makeup Men	129		
Apprentices	76		
Linotype Machinists	70		
Foremen	46		
Monotype Operators	45		
Bankmen	30		
Copy Cutters	29		
Monotype Machinists	12		
Extra List	371		
	2,227		

*Includes apprentices in other branches of the trade.

The men on extra list report at the newspaper office each day and if the edition is sufficiently large they are employed.

An attempt was made to secure information as to the number of men employed in the commercial and job shops.

Forty-five hundred questionnaires were sent to these shops asking for information as to the number of men employed in each type of work. Replies were received from 732 establishments, employing 11,285 men. The following table shows the distribution of these men in the industry:

COMPOSING ROOM	
Handmen	3,075
Machine Operators	981
Two Thirders	536
Apprentices	485
Machinists	97
	5,174

PRESS ROOMS	
Pressmen	
Cylinder	1,140
Platen	555
Job Cylinder	321
Rotary	147
Magazine	159
Book Web	147
Offset	25
Feeders	
Job	1,687
Cylinder	1,658
Magazine and Book Web	240
Offset	32
	6,111

The following estimate of the total number of men employed in the composing and pressrooms in the commercial shops and newspaper offices in Greater New York was based on the above data, a study of union records and conferences with the committees appointed by the employers' associations and unions:

ESTIMATED NUMBER OF COMPOSITORS AND PRESSMEN EMPLOYED IN NEW YORK CITY JANUARY 1, 1917

Compositors	15,278
Pressmen	4,900
Feeders	5,875
Total	26,053

SIZE OF SHOPS

Seven hundred and thirty-two establishments furnished information as to the number of men employed. Thirty-three per cent. of these firms employed ten or less workers and less than

3 per cent. employed 100 workers or over. The following table shows the number of men employed in shops by groups:

No. of Wkrs.	1	2	3	4	5	6 to 10	10 to 25	25 to 50	50 to 100	100 to 200	over 200
No. of Shops	26	85	69	66	72	164	167	52	12	6	3

NATIONALITY OF WORKERS

It is impossible to determine with accuracy the nationality of those who are engaged in the composing rooms of New York City. The 1910 U. S. census gives the number of compositors, linotypers and typesetters as 16,826. Of this number 11,534, or 68 per cent., are given as native born and 5,292, or 32 per cent., as foreign born.

Among the 2,668 pressmen, 2,109, or 79 per cent., were of native birth (either of native, mixed or foreign parents), as against 559, or 21 per cent., foreign born.

In the survey of the evening trade classes maintained by the city, 310 men who were attending the printing classes filled out questionnaires. Of this number 219, or 71 per cent., were native born and 91, or 29 per cent., were foreign born.

A study was also made of the application blanks of the men who applied for membership to the New York Typographical Union No. 6, an organization enrolling half of the compositors in New York. One thousand cases were taken, which included all who applied for membership during the four years 1913 to 1916. Of this number 791, or 79 per cent., were found to be native born and 209, or 21 per cent., were foreign born. When this situation is compared with the conditions in other skilled trades, such as carpentry with 70 per cent., or brick and stone masonry with 66 per cent. of foreign born workers, the contrast is strikingly apparent.

WHERE THE WORKERS ARE TRAINED

It is more difficult to determine where the New York printer learned his trade than to determine his nationality. The census gives no information on this point and the question was not asked of the men attending the evening schools. Of the 1,000 men who joined the New York Typographical Union No. 6, between the years 1913 and 1916, 231, or 23 per cent., had received

their training outside of the city, usually in small newspaper offices, and 769, or 77 per cent., had been trained in New York City. Many of the latter group began in small job and commercial offices, picking up such information as the opportunities of the shop afforded and applied for membership in the Union after the years of apprenticeship had been served. Others joined the Union first as Union apprentices and remained during the entire apprenticeship period.

A study of the records of 1,040 members of the Newspaper Pressmen's Union shows that 155, or 15 per cent., had received their training outside of the city and 885, or 85 per cent., had been trained in the city.

THE TRANSIENT PRINTER

Many printers are attracted to this city because of the higher wages and remain here for indefinite periods. A large number of printers trained in the city become dissatisfied for one cause or another and go to other places. It is difficult to determine what percentage of the printers who come to New York remain and what percentage leave after a few months or years.

A study of the records of the Typographical Union No. 6 for the years 1914-1916 shows that an average of 817 traveling cards are received and 761 traveling cards are issued annually. An examination of the Pressmen's and Feeders' Unions shows that an average of 200 traveling cards are received and an average of 200 are issued annually.

A conservative estimate would seem to indicate that at least 1,500 printers come to the city and nearly as large a number leave the city each year.

The confirmed transient printer is in a way an anomaly. In a large number of cases he is the type of man who fails to stick to his job. He much resembles the casual worker. Some peculiarity in his makeup prevents him from staying very long in any one place and he is always willing to move on to another city. Of course, there is always a certain percentage of workers who, on account of strikes, dissatisfaction or other reasons, decide to leave one city to take up their trade permanently in another. This class, however, can hardly be included under transients.

With the increasing demands made by the trade for men of regular habits who will "stick to the job," the days of the

transient printer would seem to be numbered. Each year the number of men who join the ranks of the transients grow less and there is no doubt that within a few years the transient printer will be as much of a rarity as the old type of tramp printer is now.

FLUCTUATION OF EMPLOYMENT

There is but little variation, month by month, in the number of men employed in the printing industry. In the book and job shops the minimum number employed during the year is 90 per cent. of the maximum number employed. In the publication of music the difference is still less, as the minimum number is 95 per cent. of the maximum, and in the newspaper offices there is but 4 per cent. in range.

However, the number of men employed does not always tell a complete story in regard to steadiness of labor conditions. In dull times firms in many industries, loath to lose their trained workers and resort to part time employment for a large number rather than continue full time employment for a small number. This is also true of the printing trade, though there is probably less part time employment among printers than among any other class of skilled workers.

NIGHT WORKERS

In developing a plan for teaching the workers now engaged in the printing trade, consideration must be given to the large proportion of these workers employed at night. Of the 5,000 men employed in some capacity in newspaper printing, approximately 50 per cent. work at night, either on the shift which works between 6 p. m. and 3 a. m. or on the "lobster" shift, which works between 2 a. m. and 10 a. m.

In addition to the men working on newspaper printing about 10 per cent. of the 20,000 printers engaged in job and commercial printing are engaged on night work. Moreover, in the busy season, which begins early in the Fall, overtime work requires a large number of printers to work at night. Night work indeed in the printing trade is of greater importance than in any other important skilled occupation.

TRADE ORGANIZATIONS

Employers' Associations

The owners of the printing plants in the City of New York are represented by three organizations—The Association of Employing Printers of New York City, The Master Printers' Association and the Newspaper Publishers' Association.

The Association of Employing Printers is composed of the owners of commercial printing houses in New York City, employing large numbers of men and producing in the neighborhood of 75 per cent. of the printing product of the city. The Master Printers' Association is composed of owners of small shops in the city. The Newspaper Publishers' Association, as the name implies, is composed of the publishers of nearly all the newspapers in the city. Not all of the owners of printing plants in the city are affiliated with these associations, but the majority are connected with some one of the three.

Most of the large shops which have membership in these associations have contracts with the local organizations of workers, in which they agree to employ only members of the local union. There are both individual contracts and association agreements between employers and unions. The conditions under which work shall be carried on, the scale of wages and regulations for apprentices, are also set forth in the contract. In return the employers are protected by their contracts against walkouts, strikes, boycotts or any other form of concerted interference with the peaceful operation of the departments over which the unions have jurisdiction. All disputes arising over scale provisions, wages, hours or the reviewing or extending of contracts are subject to local arbitration, if such disputes cannot be settled through conciliation. The Conciliation Committee appointed by the unions and the employers' association endeavors to settle all such disputes, but in case of failure local arbitration is resorted to. Each side appoints a representative and these two representatives choose a third. The Board of Arbitration so constituted takes evidence and submits its decision. At present there is no arbitration agreement between the Newspaper Publishers' Association and the Typographical Union.

Unions

The labor organizations represented in composing rooms and pressrooms of the city are:

Typographical Union No. 6
Typographical Union No. 7 (German)
Typographical Union No. 83 (Jewish)
Typographical Union No. 131 (Bohemian)
Typographical Union No. 261 (Italian)
Typographical Union No. 440 (Hungarian)
Pressmen's (Cylinder and Job) No. 51
Newspaper Web-Pressmen's Union No. 25
Franklin Assistants Union No. 23
Job Press Feeders No. 1

There are also unions of bookbinders, stereotypers, electrotypers, photoengravers and mailers.

The unions are affiliated with international bodies and are represented through three delegates in a local Allied Printing Trades Council.

The local Allied Printing Trades Council is the representative of the International Allied Printing Trades Association, an organization composed of the executive officers of the five International Printing Trades Unions: International Typographical Union, International Printing Pressmen's and Assistants' Union, International Photo-Engravers' Union, International Stereotypers' and Electrotypers' Union and the International Brotherhood of Bookbinders. This body is the owner of the Allied Printing Trades Union Label. The Local Council enforces the rules established for its protection. It is also active in other trade matters, such as assisting in the enactment of labor legislation, opposing hostile legislative measures, adjusting disputes between unions and employers and between the unions themselves.

Besides their activities in establishing and maintaining wage scales, reasonable hours of labor and fair working conditions, internationally and locally, the unions have many educational and beneficial features designed to win and hold members of the crafts.

The International Typographical Union has a home for its

aged and a tuberculosis sanitarium at Colorado Springs, Colorado. This institution is known as The Union Printers' Home. It is supported entirely by assessments levied on the membership and is worth over one million dollars. There the old printer, who has no family ties, can spend his declining years in comfort and security. There, also, members afflicted with tuberculosis can receive the latest scientific treatment for that disease. One of the features of the Home is its library. Autographed copies of the books of many contemporary authors have been contributed. Former Representative in Congress, Amos J. Cummings, bequeathed his entire collection of books and documents to the Home library. It grants a pension of $5 per week to those with twenty years membership who are unable to work, it pays mortuary benefits ranging from $75 to $400 to families of deceased members and gives correspondence courses in printing for the improvement of apprentices and journeymen.

In New York City, Typographical Union No. 6 contributes an equal amount with the local Newspaper Publishers, Employing Printers' Section and the Hudson Guild (a philanthropic institution) toward the support of a school for printers' apprentices. The Union also maintains a local old age pension fund, and has a hospital fund for the endowment of beds in the principal hospitals of the city.

Most of the men working in the pressrooms of New York City and vicinity are members of some one of the four organizations claiming jurisdiction over pressroom positions.

The pressmen working in the commercial shops are members of the Pressmen's Union No. 51. The pressmen working in the newspaper shops are members of Web Printing Pressmen's Union No. 25. The cylinder press feeders and assistants on the web presses in the commercial shops are members of Franklin Assistants' Union No. 23. The job press feeders are members of the Job Press Feeders' Union No. 1.

The pressmen's organizations are affiliated with the International Printing Pressmen's and Assistants' Union of North America. This International Union is one of the most progressive labor organizations in the country. It owns 1,100 acres of land at Rogersville in the mountains of Eastern Tennessee, where it maintains a beautiful home for its superannuated members; a well equipped sanitorium for the members afflicted with tubercu-

losis and the best equipped school for press work in the world. The executive offices of the International are located at Rogersville, and the annual conventions of the Union are held there in their own convention hall. The Union maintains very comprehensive correspondence courses in platen press, cylinder press, web press and planographic press work. Both employers and employees consider these the best courses in printing presswork ever published. They also maintain an old age pension fund, whereby an old member who retires from the trade receives $5 per week as long as he lives. A mortuary benefit of $100 is also paid.

THE COMPOSING ROOM

The need of the daily newspaper for speed in production and the consequent introduction of new methods has had a great influence upon the printing trade at large. Especially is this true in the composing room of commercial establishments. The newspapers not being in the strictly competitive field of printing, are better able to try out experimental machinery than the commercial shops, and are constantly seeking quicker methods of doing the work in their mechanical departments. The cry is "Speed! Speed! More speed!"

Before the invention of typesetting machines all type was made in type foundries, which were not a part of a printing office. This hand type was movable type and was laid in type cases. The compositor "threw in" his type and set it out. The distributing process required about one-third of his time.

EVOLUTION FROM HAND SETTING TO MACHINE COMPOSITION

The linotype was the first successful typesetting machine. This machine marked a revolution in newspaper composing room work. What four fast hand compositors formerly set in eight hours one "swift" linotype machine operator can now set in seven.

The product of the linotype and the present intertype machines is a line of type set according to copy the width of a column, in length called a "slug."

These slug-casting machines cast type from the size known as agate* (14 lines to an inch) to 24 point (1-3 inch), which is used for the small reading matter (body type) and for headings and display lines in advertisements. There are also special headletter machines in newspaper offices adapted to the styles and

*Note—Linotype, Intertype and Monotype machines can cast smaller sizes than agate, but these sizes are not in common use, and are usually set by handmen from foundry type cases.

sizes of letters used in headings at the beginning of articles. It is still necessary to set certain kinds of matter in movable type. For tabular work (railroad time tables, tariffs, etc.); dictionaries; matter where cuts (illustrations) are introduced and the measures broken up; and work where it is known in advance that there are to be many corrections it is more economical to use the product of the monotype machine (see description) which makes movable type, i. e,. each character, space and quad in a single piece.

The monotype (movable type) casts type set according to copy from agate (1/14 inch) to 36 point (½ inch) and is used for reading matter, but especially for tabular work and display. It also casts spaces, quads, leads, rules and slugs.

Another slug-casting machine, the slug display line caster makes possible the casting of large type display lines in one piece. This is accomplished by the linotype principle adapted to type sizes larger than 12 point (1/6 inch). This machine casts from 14 point (7/36 inch) to 60 point (5/6 inch) and any width up to 26½ ems (4 5/12 inches). The method used is the same as in hand composition, except that the typesetter sets matrices (dies) into a stick by hand, fits the assembled matrices with the stick into the casting machine, casts a slug and distributes the matrices back into the case, in which they are kept for future use. The slug is known as an overhanging slug on a 12 point base. When ready to make up, the overhanging part of the slug must be supported underneath by leads or slugs of the right height to prevent breaking off. The height of the base corresponds to the height of the leads and slugs cast by the monotype or linotype lead caster, so there is plenty of the supporting material needed in most newspaper composing rooms.

THE "NON-DISTRIBUTION" SYSTEM

These typesetting machines have not only made possible a great saving of time in setting type but have effected another great economy in the matter of distribution. When the material cast in these machines, type, leads, slugs, rules and borders, has been used it is not distributed in cases, but is remelted and used again to feed the machines. In this way the time of distribution is saved. This method gives a new face of type on every day's edition, and accounts for the good typographical appearance of the modern newspaper.

THE LINOTYPE

These processes have all tended to reduce the number of handmen required in a newspaper composing room and the changes, while gradual, have had the effect of forcing handmen either to learn the operation of machines or to seek work in commercial shops. When the handman does learn machine operation, he is likely to be more adept in setting matter used for advertisements and display than an operator who has had no training in this branch of the work. Handmen will always be required in composing rooms to assemble, make up and lock up type set on machines, but not in such numbers as formerly. When the handman is ready to assemble an advertisement or display matter he takes all the type for the job which has been set on the machines and sets the displayed lines (i. e., the larger lines which are used to emphasize the subject) and cuts borders and inserts rules and cuts. In a modern newspaper composing room, if there is no line larger than 36 point (½ inch) in a piece of displayed matter there is no necessity of distributing any part of it back into the type cases. If an advertisement or display matter contains a line larger than 36 point (½ inch) it is either a line of foundry type or one made on a slug display-line caster. If the former, the line must be lifted from the matter when the used form is to be broken up, and distributed into its proper case.

The commercial shop soon avails itself of whatever has proven efficient and economical in the newspaper plant and the tendency to the introduction of typesetting machines in the former soon became marked. All improvements of late years have taken this course and the "non-distribution" system is the next step toward efficiency and economy in the commercial shop and is rapidly being introduced.

Effect of "Non-Distribution" System on Handmen

The handmen feel the effect of the introduction of the "non-distribution" system just as soon as it is introduced, but it effects the less skilled among them more than the highly skilled. In every shop there are men who lack confidence, or initiative, and who must be instructed in detail. They are kept at such simple tasks as distribution, setting from reprint and assisting other journeymen who have charge of publications or other kinds of work. With the "non-distribution" system in vogue their principal occupation is gone. If they have not the ambition to take

up and master the new processes they must suffer the consequences that follow a loss of steady employment. For such men a school giving a course of study in composing room work would be a great help and a course for journeymen would, no doubt, be eagerly grasped by many of them. Such men are reluctant to attend schools where there are mixed classes of apprentices and journeymen. A separate course for journeymen seems the right solution for this class of printers.

The evolution from hand setting to machine composition forms a chapter in the history of printing that is brilliant in mechanical achievement, but tragic for the wage earner who could set only straight matter and who was brushed aside by the new devices. The trade could not absorb all of these handmen; one out of every four being sufficient under the new conditions. The misery of those days was alleviated partly by local unions furnishing out-of-work relief, and by the establishing of an old age pension fund by the International Typographical Union. Gradual adjustment to the new order was bound to come. The handman whom the trade could not support drifted away and the machine operator took his place as the typical craftsman.

Future Field of the Hand Compositor

The field of the hand compositor is also being invaded by the designer and engraver. Cover pages, artistic type display for advertisements, booklets, menus and the better class of commercial printing was once the work of the artistically inclined handman and in shops where the latest faces produced by the type foundries are purchased he is still able to compete, in a measure, with the designer and engraver. But whenever a customer now wants a particularly attractive piece of work, he calls in the designer, whose hand lettering and decorations are likely to be far superior to anything the typesetter can construct from the material at his disposal in most composing rooms. The photoengraver transforms the designer's work into shape for printing and thus eliminates the compositor with artistic tendencies. Considerable opportunities are open to this class of handman by developing their latent artistic talents through the study of hand lettering and designing. With a knowledge of letter forms and type faces the handman starts with an equipment that will enable him to master the technique of this new art more rapidly and more thoroughly than one who never handled type.

*UNION SCALE OF WAGES FOR COMMERCIAL SHOP COMPOSING ROOMS

	DAY 8 Hours	NIGHT 8 Hours
Apprentice	$ 6.00-$22.50	$ 6.00-$22.50
Handman	$25.00	$28.00
Monotype	$26.00	$28.00
Linotype and Intertype operators	$26.00	$28.00
Makeup	$25.00	$28.00
Stonehand	$25.00	$28.00
Proofreader	$25.00	$28.00
Machinist	$26.00-$31.50	$31.00-$36.50
Foreman	$30.00 up	$30.00 up

Piece workers receive from $0.46 to $0.56 per 1,000 ems. This affects only three union shops in New York City where piece work rates are in operation. The third (midnight) shift rate is $31 for 7 hours for all, including 30 minutes for lunch. The 7 hours may be arranged for any time between 1 a. m. and 10 a. m.

Rate for overtime—price and one-half. Rate for Sunday and holidays—double price.

The wages for compositors in non-union shops range from $15 a week to the maximum of the union scale. The wages paid in non-union shops are, as a rule, lower than the wages paid in the union shops. The eight-hour day is generally observed except in the smaller shops.

†UNION SCALE OF WAGES FOR DAILY NEWSPAPER COMPOSING ROOMS

	DAY 8 Hours	NIGHT 8 Hours	MIDNIGHT 7½ Hours
Apprentice	$ 7-$20	$7-$21-$23	$7-$24
Handman	$30.00	$33.00	$36.00
Monotype	$30.00	$33.00	$36.00
Linotype and Intertype Operators	$30.00	$33.00	$36.00
Bankman	$30.00	$33.00	$36.00
Copy Cutter	$30.00	$33.00	$36.00
Makeup	$30.00	$33.00	$36.00
Proofreader	$30.00	$33.00	$36.00
Machinist	$25.00-$31.00	$31.00-$36.00	$31.00-$36
Foreman	$50 and up	$50 and up	$50 and up

*As this report was being printed an agreement was entered into by the Printers' League Section and Typographical Union No. 6 for a flat raise of $2.00 per week for all journeymen.

†As this report was being printed, a new scale was presented to the Newspaper Publishers by the Union seeking an advance of $6 per week.

Rate for overtime—price and one-half.

There are only two non-union daily newspaper composing rooms in New York City. The wages and hours in these shops are the same as in union shops. No holidays on morning newspapers, but afternoon dailies observe Thanksgiving, Christmas, New Years and Fourth of July.

APPRENTICE TRAINING IN THE COMPOSING ROOM

The training that an apprentice receives in the composing room is better than similar training in most industrial occupations. If a boy does satisfactory work, he becomes a journeyman at the end of five years. This assurance of a journeyman's wage at the expiration of a definite period of training attracts many boys to this branch of the trade.

The art of printing is continuously educative, especially to the typesetter. The primer and the treatise on differential calculus come to him as a part of his daily work. Some of the copy he reads may leave an impression on his mind. All of it adds to the sum total of his intelligence. His work, his environment and his associations tend to make him a good citizen in any community.

Commercial and Job Shops

A study of the records received from 732 commercial and job shops shows that there are in these shops 4,153 hand and machine journeymen compositors, 536 two-thirders† and 485 apprentices employed in the composing rooms. From figures collected by survey staff and committees it is estimated that there are in round numbers approximately 1,250 apprentices in the composing rooms of New York City. The two-thirders may be classified either as journeymen or apprentices. If they are eliminated the data shows that there are about twelve apprentices to each hundred journeymen.

In New York City nearly all the large shops have trade agreements with the union providing for the length of apprenticeship, the number of apprentices to be employed in each shop, the work to be done each year of the apprenticeship, the wages to be paid and other details. The union insists that the number

† "Two-thirder" is a craft term designating one who has not reached the competency of a journeyman, and is usually paid two-thirds of a journeyman's wage.

of apprentices shall not exceed the number stipulated in the agreement, and that each apprentice shall be required to serve a full term of five years.

These agreements provide that there shall be but one apprentice for every eight journeymen or major fraction and that not more than eight apprentices shall be employed in any one office. Each union office of any size shall be allowed at least one apprentice, and each newspaper shop is limited to four apprentices.

Following is an excerpt from the Scale of Prices of New York Typographical Union No. 6, giving in detail the rules governing the employment of apprentices agreed to between the Printers' League of America and the Closed Shop Division of the United Typothetæ (employing printers) and the Union:

Rules Governing the Employment of Apprentices

In book and job offices apprentices may be employed in the ratio of one to every eight men or a majority fraction thereof; but no more than eight apprentices shall be permitted in any office. Each union office shall be allowed at least one apprentice. In offices where the work fluctuates, the average for the preceding year shall be the basis for the number of apprentices.

Any office not doing hand composition, but confining itself exclusively to machine composition, shall not be allowed any new apprentices after the adoption of this scale.

In the first year an apprentice shall be required to perform general work in the composing room at the discretion of the foreman at any work which he may be deemed capable of doing.

The foreman is required to test the ability of all apprentices under his charge during the first year of their service, to determine the fitness of such apprentice for the trade. The apprentice shall thereupon receive from his foreman a written statement of his qualifications, copy of which he shall file with the union and the organization to which this office belongs. Should an apprentice be proven incapable he shall then be refused further work at this branch of the trade. Any dispute arising through this measure with any office not in the Printers' League or Closed Shop Division of the Typothetae may be laid before the Joint Conference Committee of either the Printers' League or Closed Shop Division of the Typothetae and Typographical Union No. 6, at which all parties concerned shall be present.

In the second year an apprentice shall be employed at least fifty per cent. of his time at hand composition and distribution. He shall be given opportunity to set reprint ads and job work.

In the third year an apprentice shall be employed at least seventy-five per cent. of his time on the floor at hand composition and distribution. He shall be given opportunity to set ads and job work from manuscript, and assist on make-up and imposition. All apprentices shall serve a term of not less than three (3) nor more than six (6) months of the third year as copy-holder and assistant proofreader, but shall not do first reading.

In the fourth year an apprentice shall be employed at least seven hours each day at hand composition, distribution, make-up, and stone work.

In the fifth year an apprentice shall be employed his full time at floor work, and during the last three months may be allowed to set live matter on machine. He shall receive the following scale:

In effect January 1, 1916, to January 1, 1918:

For first 3 months	$16.50
For second 3 months	18.50
For third 3 months	20.50
For last 3 months	22.50

In effect January 1, 1918, to October 1, 1919:

For first 3 months	$17.50
For second 3 months	19.50
For third 3 months	21.50
For last 3 months	23.50

The ratio of one to eight shall be maintained for all shifts and overtime.

Apprentices shall be registered on the books of the Union and shall at all times be under the direction of the foreman and supervision of the chairman in regard to carrying out these rules.

All apprentices when registered shall be between 16 and 21 years of age.

* * *

No apprentice may leave one office and enter the service of another employer without the written consent of his first employer, endorsed by the President of Typographical Union No. 6. When an apprentice is discharged the foreman shall at once notify the chairman of such fact, who shall investigate the cause of discharge, and if, in his opinion, the discharge is not for good and sufficient reasons he shall so report to an officer of the union.

A form of indenture shall be prepared, to be approved by the employer and Typographical Union No. 6, for the signature of each apprentice registered in offices.

Any apprentice who wilfully neglects the duties which he is required to attend to under these rules may be brought up and disciplined by the Discipline Committee of the Union.

These rules shall be posted conspicuously in all offices."

In commercial shops a five-year apprenticeship, following the rules agreed to between employers and unions, will produce a fairly good compositor, but every shop lacks something toward turning out a fully competent, capable mechanic. There are large shops devoted wholly to magazines and trade papers where the work is of a routine nature, performed on a time schedule, and with very little variety. The shops that do book and job work are almost ideal places in which to train apprentices, since the diversity of work brings them in touch with every important phase of composing room operation. The apprentice handles machine and hand composition, display for advertisements and job

work, makeup, stonework and machine composition, has proof-room practice and gains a general idea of what photo-engraving, electrotyping and bookbinding contribute to the industry.

Another type of shop is the small job office with only platen presses, the largest of which can print a sheet 17 x 23 inches. Here the apprentice may handle machine type set by a trade composition house. He does not see a typesetting machine in operation and fails to grasp its possibilities. He obtains no instruction in imposition of cylinder press forms and in making up large pages. In the great number of small printing offices, boys are working at typesetting. In some small shops no systematic effort is made to teach these boys the trade—they pick up whatever knowledge they can and seldom become competent printers. It is obvious that a boy can never be graduated as a well-trained journeyman from an office where the character of the work is commonplace and the equipment poor. Many of these boys leave the trade, as they see no future for themselves after a few years in the small shops. Some continue and find employment as "two-thirders," and a few eventually get into large offices and develop into good printers. Boys in the small shops receive from $5 to $9 per week, "two-thirders" from $10 to $18. If a boy has a common school education he can begin as a printer's apprentice, but to advance he must give some time to the study of spelling, grammar, punctuation, capitalization and syllabication. It is possible to become an acceptable typesetter without special study. The mere process of correcting the galleys, noting and remembering the errors made, will in time make a boy useful, but his usefulness and opportunities for steady employment will be enhanced if he enters apprenticeship well grounded in the English language or attends continuation or evening classes during his apprenticeship period. Arithmetical knowledge is also very important for him. In the composing room there are calculations and measurements to be figured. The setting of the stick, the measurement of type pages, the calculation of matter on galleys, the imposition of forms, the cutting of paper, the casting up of tables, the various kinds of mathematical matter occurring in copy, all require a knowledge of arithmetic. If the apprentice has given to this branch serious study in school, it will be much easier for him to grasp the many problems coming up in the course of his work.

The composing room graduate makes the ideal executive in

printing establishments and the many calculations that must be worked out in the business office will be easier for one well grounded in fundamental requirements during his apprenticeship. Another reason for efficiency in figuring is that the composing room calculations affecting typesetting call for accuracy. Estimating the amount of matter copy will make; casting off tables to be set; ascertaining areas in triangles, quadrangles, circles, ovals and irregular forms; obtaining margins in imposition, all call for a knowledge of arithmetic that every typesetter should acquire early in his career. Drawing straight lines to square up and register pages in sheets from the press make necessary a knowledge of the elementary principles of drafting and the use of the steel square and the straight edge. A further advance in this field will bring the student to the art of hand lettering, designing and color harmony, all of which have a place in the modern printing establishment. A compositor who can make sketches accurately, indicating the appearance of display matter before setting up, is a valuable asset to every shop. To be able to do hand lettering that can be reproduced by the photoengraver brings a compositor into a field that will easily lead to a better salary and a more desirable place in the trade. Even if a typesetter finds that he has no talent or skill for drawing he should study sufficiently to be able to read sketches, layouts, diagrams and color schemes, as these are a necessary part of his trade equipment.

Newspaper Offices

*Seventy-six apprentices were found in a total of 2,227 workers employed in the composing rooms of the newspapers published in English in New York City.

The following rules governing the employment of apprentices have been agreed to between the Newspaper Publishers' Association of New York and Typographical Union No. 6:

> In newspaper offices, declared as such by the Union, apprentices may be employed in the ratio of one to every twenty men or a majority fraction thereof, but no more than four shall be permitted in any office.
>
> In the first year an apprentice may be required to perform general work in the composing room at the discretion of the foreman.

*As this report was being printed a new agreement was presented to the Newspaper Publishers by the Union seeking the abolition of all apprentices in newspaper offices.

In the second year an apprentice shall be employed at least fifty per cent of his time at hand composition and distribution.

In the third year an apprentice shall be employed at least seventy-five per cent. of his time at hand composition and distribution, and shall receive one-half of the regular scale.

In the fourth year an apprentice shall be employed at least seven hours each day at hand composition and distribution, and shall receive one-half of the regular scale.

In the fifth year an apprentice shall be employed at least seven hours each day at hand composition and distribution, and in machine offices may practice on the machine, and shall receive two-thirds of the regular scale.

Apprentices shall be registered on the books of the Union and shall at all times be under the supervision of the chairman.

All registered apprentices shall be between the ages of sixteen and twenty-one.

Apprentices shall be prohibited from working overtime or more than six days in any one week.

On the completion of the term of service of an apprentice and his admission into the Union he shall be placed at the bottom of the priority list in the office in which he is working. * * *

In newspaper offices an apprentice cannot obtain the training to fit him for competency in a commercial shop. The newspaper composing room must meet editions promptly, and workmanship must often be sacrificed for speed. An apprentice trained where the details of good typesetting are secondary to speed is likely to form habits that need correcting and this has been recognized by the trade, first by limiting the number of apprentices in newspaper composing rooms to four, and second, by insisting on their attendance to the Hudson Guild School for Printers' Apprentices. A newspaper apprentice can learn sufficient in five years to make him a useful employee in the particular office where he is employed, but unless he receives instruction in display, job work, book and magazine makeup and imposition, he will not be a competent all-around compositor.

Need for Outside Training

Each type of shop mentioned, except the book and job office, lacks some essential to turn out a finished typesetter. Thus, many apprentices on becoming journeymen carry a handicap that hinders them from attaining higher wages and better positions.

The trade is cognizant of its shortcomings regarding apprentice training, and the organized portion of it has, in a measure, sought to improve the opportunities of its apprentices to obtain outside instruction in the things that the shop fails to give. Em-

ployers' associations and labor organizations co-operate in the work of the Hudson Guild School for Printers' Apprentices, and the West Side Y. M. C. A. School is maintained by employers. Details concerning these institutions will be found elsewhere in this report. These schools, however, do not touch all branches of the industry and are not equipped to meet fully the demands of the trade.

Boys and Helpers

In every printing office there is much work that boys can perform. These are usually engaged as errand boys and are put to such work as delivering packages, putting away material, such as leads, reglets, rules and furniture; running proof presses, sweeping and cleaning and holding copy for proofreaders (except in newspaper offices). These boys are usually 16 years of age, but some may be but 14 or 15 years old, to whom the health authorities have issued working papers. They are usually advanced to apprenticeship in the mechanical department.

Helpers in composing rooms work around the linotype machines and in the monotype casting rooms. They carry metal, keep the metal pots filled, keep the machines clean and are generally useful in the machine department. In the monotype casting room they watch the casting operation, remove the type galleys when filled and serve as general assistants to the machinists. While they acquire knowledge of the machines and are useful workers, their occupation is regarded as a "blind alley" job. To become machinists on either linotype or monotype machines, an apprenticeship at the machinist's trade is necessary, as well as special courses in the factories where composing room machinery is built. Helpers who are engaged without special technical training seldom advance beyond the stage of simple tasks. They are generally young men between the ages of 18 and 25 years of age, although some are older. Their wages range from $9 to $15 per week. Ability to read and write simple English is the only education required for the job. Dexterity in handling material is all the skill that is required.

WOMEN IN COMPOSING ROOMS

Many women find employment in composing rooms as machine operators and in the proofrooms. That they are received in the

union on an equal footing with men is shown by the following extract from the Book of Laws of the International Typographical Union:

"Equal wages and conditions shall prevail for both sexes in every local jurisdiction of the International Typographical Union, subject to the requirements of the laws of the various states, as these laws affect women workers. Any member who violates the provision of this section, upon conviction, shall be punished by a fine of not less than $25 or suspended, as the union may determine, in accordance with International Law."

Women make efficient keyboard operators, developing speed equal to the best male workers. There are at present more monotype than linotype operators among women composing room employees.

In the proofrooms women, who have had composing room training, find employment for which they are well adapted, and many have risen to well paid positions as copy readers and expert indexers.

A recent act of the New York Legislature forbids the employment of women after 10 o'clock at night. This has deprived many women printers of situations on morning newspapers, and some who could not transfer to the day shift were forced to seek work in commercial shops in which wages are lower.

There are about 1,000 women employed in the composing rooms in New York City. About a quarter of this number are members of the Union and receive the regular scale of wage. About two-thirds of the women engaged in composing rooms are machine operators and about one-third proofreaders.

CIRCUIT MACHINISTS

In some 50 trade composition shops in the city with equipments of from one to fifteen machines, a breakdown occurs occasionally, calling for the services of an expert typesetting machinist. Many of the shops are too small to employ a machinist regularly and depend on what is known as a circuit machinist to make their repairs. There are several circuit machinists in New York who have built up a lucrative trade attending to the repairs of typesetting machines in small shops. These men are familiar with every detail of the work and make needed repairs quickly and thoroughly.

SUBDIVISION OF COMPOSING ROOM WORK

In the early days of printing the term printer meant a craftsman who could perform all of the operations necessary to produce a finished book. In Gutenberg's time the printer built the press, cast the type, made the ink and inking pads, set the type, printed the sheets, and finally bound the book. In Franklin's day some changes had occurred. The printer of that day could buy presses, type and ink, but he still cast his rollers, set type, ran the press and bound the printed sheets.

Somewhat later, about 1800, roller making and bookbinding became separate industries. In the printing office itself there occurred a division into composing room and pressroom. In the composing room compositors came gradually to specialize as straight matter hands, jobbers, stonehands and proofreaders. When machinery was introduced a further division of labor took place, and linotype and monotype operators, and machinists were added. In large modern composing rooms men are kept at special tasks for long periods. They became experts at certain kinds of work and are valuable financial assets to the office on that account. For this reason they are kept at their special tasks and each special operation is almost a trade in itself.

Training for the Composing Room Worker

There are forces at work seeking to bring about a broader training for the composing room worker, but much remains to be done. Specialization is necessary and inevitable, but it is also detrimental in a degree to the chances for the worker, as a man is often held in one shop, fearing to change, because he lacks training in many of the things that would enable him to do the work of an all-round mechanic.

In the following pages an effort has been made to cover what the worker in the composing room does, the knowledge necessary for the routine performance of his task and that needed for full comprehension of his work.

HANDMAN

The handman reads copy and assembles type by hand, including straight composition, tables and display. To do this, he sets the composing stick to measure, picks up type from the case, jus-

tifies and spaces it in the stick and transfers each stickful to galley (when typesetting machines are employed this process is done by the machine.) He corrects the type in the galleys and pages according to proofreader's marks, makes up pages (see makeup), arranges same (imposes) and locks up forms for the foundry or presses, putting in furniture and making margins according to sizes required. (See stonehand.) He should be able to perform various unclassified duties, such as distributing type, cutting leads and rules, and "pulling" proofs by hand or on proof presses.

The handman needs facility in interpreting copy that is badly written, in correcting errors which have crept into the manuscript and in setting copy in which spelling and punctuation are faulty. He must possess skill in setting, making up and distributing type, and have the ability to memorize sections of copy.

The handman should have the training indicated for an apprentice. His knowledge of mathematics should enable him to read mathematical signs, common fractions, decimals and Roman numbers, when occurring in copy. He should know the printers' point system; be familiar with the foot rule and steel square; read proofreaders' marks; interpret sketches, layouts and diagrams.

His knowledge of mathematics should be sufficient to enable him to make the calculations necessary for tabular work and to figure margins and space in locking up pages for press and foundry. As suggested under apprentice training advancement in the printing trade is dependent largely upon mental growth and broad acquaintance with the terminology and good usage in general and special literature. This breadth of information is particularly needed by the expert handman. The handman should endeavor to cultivate a feeling for proportion, and balance in type arrangement so as to obtain the best effect from display work. Any latent artistic talents should be developed along the line of hand lettering, decorative designing, and color harmony. The handling of type gives the handman a knowledge of letter forms that usually require close study by letter draftsmen who are not printers. It is an easy step from hand lettering to other decorative schemes used in printing and many successful printer artists are graduates of the composing room. It is also from among handman that composing room executives are usually chosen, as the best general knowledge of composing room work is obtained by the men employed in the hand department.

LINOTYPE AND INTERTYPE OPERATORS

(Men and Women)

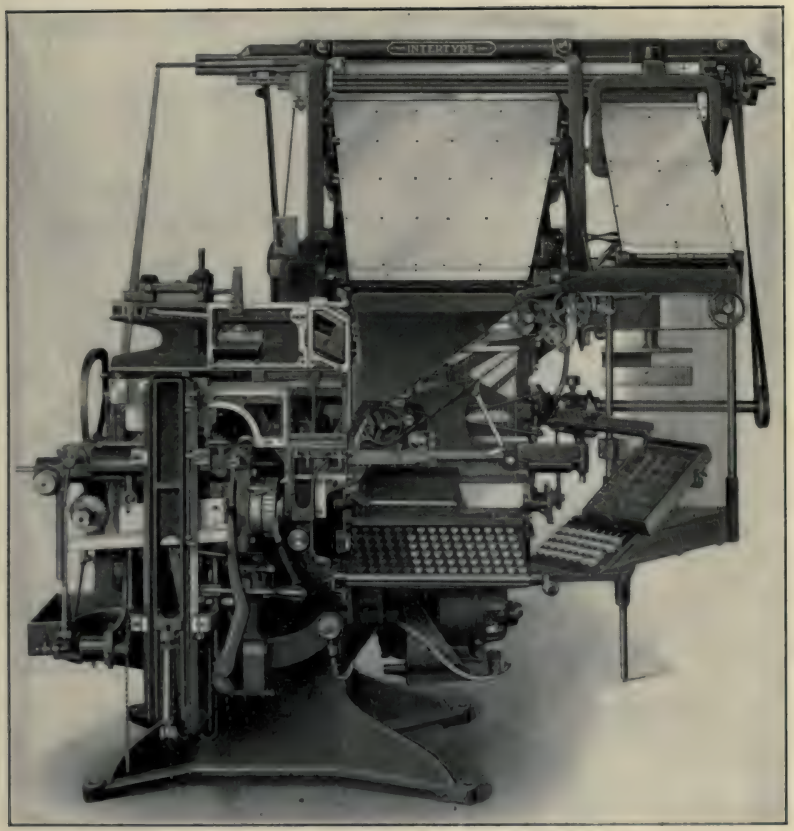
Linotype and intertype operators work on keyboard machines that cast slugs of various measures and sizes of type. By touching keys on a keyboard matrices (letter moulds) and space bands, (for spaces between words) are assembled. By throwing down a lever the assembled line is sent to a casting device, which automatically casts the line, after which the matrices are automatically returned to their proper channels in the magazine and spacebands to their holder. The feeding of the metal pot (unless self-feeders are attached) and the emptying of the galley which receives the lines, must be performed by hand. The operator must be able to read all kinds of copy, to memorize sections of the same, and give it proper interpretation as regards spelling and punctuation. He should possess accuracy and speed in manipulation of keyboard, which he should be able to operate by the touch system. The operator puts his individual "slug" at the head of his "take" or galley to indicate matter set by him. He also keeps the metal pot filled.

The operator should have the training indicated for the apprentice, and in addition should understand the mechanism of the machine, so that in an emergency he would be able to make minor repairs.

As in the case of the handman the operator should devote much of his leisure to the study of literature, newspapers, public documents and printing trade papers to familiarize himself with names of persons, places and events, as these things are constantly occurring in copy passing through his hands. Beside the special skill required the greatest need of the machine operator is the breadth of training represented by the superior hand compositor, and this is not always found among machine workers.

LINOTYPE AND INTERTYPE MACHINISTS

Linotype machinists are employed in plants where the number of machines used is sufficient to justify the employment of a man whose sole duty is to keep the machines in repair. Usually, plants of more than four machines employ one or more machinists. The machinist makes repairs and adjusts and supervises the machines to see that they are running properly; sees that the temperature



INTERTYPE TYPESETTING MACHINE

of metal is correct and tests it mechanically to determine if alloy is in proper proportion. He changes matrix magazines, repairs matrices and spacebands; and supervises the remelting of metal.

He must be able to clean and refit gas and electric burners, clean, repair, adjust and oil working parts of the machine, such as cams, delivery slide levers, pumps, distributor mechanism, driving and intermediate shafts, clutch, keyboards and magazines. He adjusts the metal pot and plunger, the spacebands, vise, knife wiper, ejector slide, elevator, matrix transfer, spaceband levers and pawls, mold discs and slide, mold driving mechanism, start- and stopping device, etc.

The linotype machinist needs a common school education and should be an all-around machinist on small work. He must understand the mechanism of the machine; know the printers' point system; be an expert in micrometer reading, and be able to interpret diagrams relating to machinery.

Most machinists have at some time worked in the factories where the machines are built, and these factories are always open to them for the study of new machines, devices and parts as they are introduced.

MONOTYPE OPERATORS

(Men and Women)

The monotype casts movable type, and consists of two separate machines—keyboard and caster. The monotype keyboard operator strikes a key, which perforates a paper ribbon carried on the keyboard. The position of these perforations upon the paper ribbon determines the letter the casting machine will make, just as perforations in a roll of music for a mechanical player determine the notes the piano will play. As the operator thus sets the copy at the keyboard, the ribbon is wound on a spool, which is transferred from the keyboard to the casting machine whenever it is desired.

The monotype casting machine is a complete type foundry which, when controlled by the paper ribbon, casts type set up, ready to print from, in automatically justified lines. This matter is cast with low quads and spaces if the work is to be printed from type, or with high quads and spaces if it is to be electrotyped or stereotyped. It also makes type, rules, leads and slugs for the cases. The operator must care for his keyboard, often,

making minor repairs. He changes the machine for different sizes of type and width of composition. As with the linotype operator, he must develop accuracy and speed in the manipulation of the keyboard with the touch system.

An operator should have the training indicated for an apprentice. In addition he must master the monotype unit system for making calculations. The keyboard operation is different from that of the linotype, in that it resembles the standard typewriter keyboard. He is required to have greater facility in mathematics than the linotype operator, inasmuch as he is called upon to make mathematical calculations in the operation of the drum scale, and in estimating space needed for rules and other material in the completed form. A thorough knowledge of the technique of the compositor's art is essential for the operator, though he does not need the skill of a hand compositor. He must understand the relation of the keyboard to the caster machine, in order to keep the caster going properly when it receives the perforated roll. Moreover, he should know something of the construction of the caster.

A monotype operator should possess the same general knowledge as indicated under linotype operator, and special knowledge of the mechanism of the monotype keyboard. The peculiar possession of a monotype operator is his thorough acquaintance with his keyboard and the general mechanism of the machine.

MONOTYPE MACHINIST

The monotype machinist selects the matrices from which type is cast, adjusts the perforated paper coming from the keyboard machines and supervises the mechanical operation of the machine. He regulates the burners under the metal pots; makes repairs and adjustments to the caster and the keyboard machines, tests metal mechanically to see that the alloy is in proper proportion, tests type measurements, and usually has charge of the storage of matrices and type sorts.

The monotype machinist should have the same general qualifications as the linotype machinist. In addition he must understand the mechanism of the monotype machine and comprehend fully the monotype unit system and gauges.

The monotype factories in Philadelphia and Boston furnish the schools from which these machinists graduate.

MONOTYPE KEYBOARD

MONOTYPE CASTER

MACHINIST OPERATORS

Printers who have sufficient knowledge of the mechanism of the linotype, intertype and monotype machines to perform both the functions of a typesetter and a machinist are found in small plants.

MAKE-UP MAN

A make-up man is a handman, or operator, employed at making up pages. In a commercial shop this task consists of dividing type on galleys into pages, inserting rules, cuts, running titles, and marginal and foot notes. When pages are spaced into equal lengths they are tied up. They are then ready to submit to the author, or to be printed.

The educational and other qualifications, wages and opportunities are the same as for handmen.

A newspaper make-up man requires all the knowledge of a handman. He assembles type for publication into pages, under the supervision of an editor, and locks up the forms for the stereotypers. Speed and accuracy are the principal requirements of a make-up man, and this work is usually performed by men with long experience in the newspaper composing rooms.

PROOFREADER

The proofreader compares proofs with copy, and indicates errors in type, English and office style. He queries author's possible errors, revises the second proofs and passes (O. K.'s) pages and sheets for the foundry and presses.

The proofreader must have a well-grounded knowledge of English usage, especially as relates to grammar, spelling, punctuation and syllabication. He must know the conventional proofreader's marks. The union rules require that the proofreader shall have served the regular apprenticeship for compositors or machine operators.

A wide acquaintance with general topics, such as literature, the arts and sciences, politics, business and sports, together with a knowledge of scientific mathematical and technical symbols, are very desirable qualifications. A proofreader cannot be too well read. An acquaintance with one or more foreign languages,

geography, and a knowledge of the resources and history of the principal countries of the world, are valuable assets, especially in the newspaper office.

Proofreaders usually develop from among the most intelligent of composing room employees and are generally older in years than the average worker. Men and women from 25 to 70 are engaged in this line of work.

STONEHAND

The stonehand lays type pages and plates on the flat imposing stone, or on patent blocks, according to a standard imposition, or one furnished by a bookbinder. He places proper furniture between pages and margins, as various sizes of pages or paper require, squares and lines up pages in chases and locks the forms for press. He also makes the final corrections and registers the pages after the pressman has adjusted the guides on the press.

The educational and other qualifications are the same as for the handman.

The stonehand should be familiar with sizes, weights and qualities of papers, the standard hand and machine folds, the sizes of beds and speeds of presses in the plant where he is employed. He should be conversant with various arrangements of layouts in order to secure the most economical results in the use of paper or the number of impressions on the press.

Stonework is the hardest manual labor in a composing room. Stonehands are usually the older journeymen between the ages of 30 and 60 years. They easily command more than the minimum wages. All executives must have a thorough knowledge of stonework as the appearance of a finished book is dependent on proper imposition and registering of forms.

COPYHOLDER

(Boys and Girls)

A copyholder, when not a regular apprentice, is usually a boy or girl 16 years of age, or over. The copyholder follows the reading of the proofreader, calling attention to the departures from copy, or reads to the proofreader.

Clear enunciation, proper pronunciation, and a fair knowledge of English usage are essential.

A copyholder has no future in the trade unless he or she can become an apprentice in the composing room, and eventually develop into a proofreader. In itself it is a "blind alley" job.

COPYCUTTER

(Newspaper)

A copycutter receives copy from news, editorial and advertising departments, cuts it into "takes" (sections), and numbers them for distribution to typesetters. He judges and allots these "takes" so that the typesetters on a particular piece of work will all finish as nearly at the same time as possible. A newspaper copycutter requires all the knowledge of a handman, and should be familiar with machine operation. Copycutters are selected from among the men with long experience in newspaper work.

BANKMAN

(Newspaper)

The bank is an inclined table divided into long galley-like sections where operators deposit their "takes" when set. The bankman puts the "takes" in their proper order, places them on a galley, numbers them, and turns them over to the proofpress operator, or proves them himself. Usually two first proofs are taken; one to send to the proofroom to be read, the other to be filed for the use of the foreman to ascertain the amount of type each operator has set. When the proof is corrected the operator's number slug is removed and the matter closed up in continuous story form and is ready then for the editor's revision and correction, if required.

FOREMAN AND SUPERINTENDENT

Composing room foremen and superintendents should have a thorough understanding of the mechanical processes of hand work and machine operating; be familiar with the details of photoengraving, stereotyping, electrotyping, presswork, and bookbinding; have a sufficient knowledge concerning ink, paper, printing material, tools, equipment and accessories to secure best results

and possess the requisite executive ability to effectively direct the work of the employees. They are usually men of long experience in the trade. Good salaries, ranging from $30 to as high as $150 per week are easily commanded by competent men.

THE PRESSROOM

MECHANICAL DEVELOPMENT IN THE PRESSROOM

In the installation of the most modern machines and devices making for greater economy and efficiency, the pressroom has been surpassed by no other department. Automatic feeders, automatic presses, pile deliveries, mechanical overlays, improved processes of printing and make ready, and presses built for greater production and speed are being constantly developed. Supply men, chemists and inventors are constantly bringing into the pressroom newer, in some cases, revolutionary methods, to bring about increased and better ouput at the same, or lower cost.

Types of Presses

There are three types of presses now running in the pressrooms of New York City; platen, cylinder and rotary.

In the platen press the form and the platen (impression surface) are both flat, and the printing is done by bringing both surfaces together under pressure.

A cylinder press (sometimes known as a flat bed press) is one in which the bed carrying the form is flat and passes back and forth beneath a cylinder (known as the impression cylinder) that rotates at constant speed. The printing is done when the medium which is to be printed upon passes between the form and the cylinder.

A rotary press consists of two cylinders, the plate cylinder and the impression cylinder, and the printing is done by passing the material to be printed between these two cylinders.

A perfecting press is a press that prints both sides of the sheet before delivering it. What is known as a web-press is a press that is fed by paper in roll form, and as the press is printing, the paper feeds continuously from the roll. There are two kinds of web presses, cylinder and rotary. As a general rule, however, when a web-printing press is spoken of it means a web rotary perfecting press.

Speed of Presses Continues to Increase

Manufacturers continue to make improvements upon presses which, from a mechanical viewpoint, seem already perfect. The demand for greater production and finer kinds of work constantly stimulates the effort towards improvement. Machines which are popular today may be obsolete ten years from now. The crying demand is for speed. The class of work which is being done today seemed almost impossible a few years ago. For example, one press has been developed which prints four colors, using four plate cylinders and only one impression cylinder.

The rotary web perfecting presses are constantly gaining in favor. They are turning out a high grade of work at far greater speed than the cylinder presses and most of the magazine and book work of the city is being printed upon them. It is only a question of time, in the judgment of the printing authorities consulted, when the web presses will be used for much of the work now accomplished by cylinder presses.

The largest press built is a double octuple press, having eight pairs of cylinders. The press consists of two separate octuple presses that can be coupled together, if the size of the sheet to be produced requires it. The builders of this press claim it can run 32-page papers at the rate of 75,000 per hour.

The press that has been most successful as a producer, in the newspaper pressrooms of New York, is one consisting of three pairs of cylinders, known as a sextuple press. It is fed by three rolls of paper, each four newspaper pages wide. This press produces 96,000 12-page papers, or 48,000 24-page papers, per hour. Before 1917 the highest production ever attained by any press of the same number of cylinders was 70,000 12-page papers, or 35,000 24-page papers.

One trouble the press builders are beginning to meet is due to the great speed at which the presses are being run. The composition of which the rollers are made does not always stand the considerable centrifugal force to which they are subjected, and pieces of roller composition become detached and fly off as the press is running. It will be interesting to know just when, and at what rate of speed, the press builders will declare they have reached a point of maximum efficiency.

The machine and automatic devices now being introduced are far more complicated, and require more delicate handling and adjustment than those of the past. This necessitates more highly

trained pressmen, in fact, calls for a trained mechanic, competent to deal intelligently with the complicated and costly machinery placed in his care.

METHODS OF PRINTING

There are three methods of printing—relief, intaglio and planographic. In the first two processes the printing is accomplished because of the printing surface being either raised in relief above the rest of the plate, or etched below the surface. In the planographic process known as the offset process, the printing surface is in the same plane as the surrounding surface of the plate. In the first two processes printing is made possible by difference in position: in the last by difference of condition. The relief and intaglio processes are purely mechanical processes, but the offset is a chemical as well as a mechanical process.

The relief method is represented by printing from type, line cuts and halftones, either directly or in the form of stereotypes or electrotypes. The ink is deposited by rollers upon the raised surface of the form, and the medium to be printed upon is impressed upon this surface.

The intaglio process of printing is known as "Gravure," "Rotogravure," "Rotarygravure" and "Photogravure." The first and last names are mostly used when speaking of work printed from flat plates, but all four names are proper when the printing is done from etched cylinders in a web press.

In rotary web presses the cylinder, upon which the design or work is etched, is a steel drum with a facing or jacket of copper. This cylinder revolves through an ink fountain and comes out dripping with ink. A steel blade known as the doctor blade oscillates across the surface of the cylinder, scraping away all superfluous ink from the surface and leaving the ink only in the depressions of the cylinder. The paper passes between the copper etched cylinder and the impression cylinder which consists of medium hard rubber. The impression cylinder tends to force the paper into the depressions causing the ink to be deposited upon the paper.

Because of the varying depths of the etched depressions, different thicknesses of ink are deposited on the different tones. This causes some difficulty in the matter of drying the ink deposited upon the solid tones. In order to accelerate the drying, the sheet

is run over a steam cylinder. New presses for this process are now being built to run at the rate of 30,000 four page newspapers per hour. These are built after the type of the web rotary perfecting machines.

The planographic method is represented by the so-called offset process in which the printing is performed by a moistened surface of zinc and aluminum either directly or indirectly with the aid of a cylinder carrying a rubber blanket. In this method the desired printing pattern, whether of type or cuts, is transferred to a plate through the medium of certain substances which render the surface grease attracting. The spaces untouched by the pattern are grease resisting when moistened by water. The plate is put upon a cylinder and, as the cylinder revolves, it first comes in contact with the water rollers; where the plate is grease attracting, it repels the water, but the rest or blank parts of the plate are dampened. As the cylinder continues to revolve, it comes in contact with the inking rollers. The inking rollers ink the grease attracting part of the plate, but that part of the plate that has been dampened, is now grease repellant and repels the greasy ink. The plate then deposits the ink upon a rubber blanket, which serves as the final printing surface.

The advantages claimed for the offset process is that it needs no make ready on the press and gives good results when printing on rough as well as on calendered stock.

EMPLOYMENT

The conditions of employment in New York, with one or two exceptions, are on a par with the best shop conditions in the country. The pressrooms are well lighted, but in most cases poorly ventilated, due to the fact that for the best results from the inks, there must be no draft, and the temperature of the pressroom must be maintained fairly constant.

The sanitary conditions are looked after by committees appointed by the unions, who co-operate with the employers, with the result that there are very few complaints.

Due to a campaign of education, inaugurated by the International Printing Pressmen's and Assistants' Unions, assisted by the local unions, the death rate from tuberculosis, which was very high in the past, has been greatly reduced. Poorly ventilated pressrooms, paper dust, fumes from ink, metal, and oils, necessi-

tate on the other hand strong lungs for all contemplating entrance to the trade. Danger of being caught in the machinery, or of being cut by the metal plates, resulting with blood poisoning, makes it a slightly hazardous trade.

The nature of the work, which involves handling large forms and rollers, requires workers who are strong physically. Good eyesight and hearing are also essential in the pressroom. There is a constant strain on the eyes, and the ability to tell by the sound when the press parts are not running true is very essential.

All the organized shops, and many of the unorganized shops, have an eight-hour day, or 48 hours a week. The work is fairly constant all the year round, with the exception that it drops off a little during the summer months.

The trade, as regards the number of workers, is virtually at a standstill. In the job shops automatic presses with greatly increased output are being installed, and in consequence the volume of work produced is greater, but the number of positions either remains the same or is decreasing. As these automatic presses can do the work of two or three ordinary job presses, they effect a large saving in floor space. Automatic feeders are also eliminating job press feeders.

In the commercial shops web presses are fast supplanting the cylinder presses. All of the book magazines are being printed on web presses. There is one publication in New York that formerly required 90 odd cylinder presses to turn out work now being done by eight web presses. This, of course, decreases the number of positions for pressmen and their assistants. Automatic feeders are also being placed on all cylinder presses, thereby decreasing the number of cylinder feeders.

In the daily newspaper offices, as the circulations of the several papers increase, higher speed machines are installed which increase the output, but do not effect the number of positions.

HOW PRESSROOM WORKERS ARE TRAINED

No Definite Training For Apprentices

The fact that the conditions in the modern pressroom require the services of two or more feeders to one pressman, makes it impossible to give the boy who enters a pressroom any definite assurance as to the training he will receive. As a matter of fact many men spend fifteen or twenty years in the pressroom before

they become pressmen and, in some cases, they never reach this position, but remain as feeders, or assistants. The chances for promotion in this branch of the trade are slight, but the wages paid to the feeders and assistants seem to be high enough to attract sufficient numbers to supply the demand.

The boy who wishes to become a pressman may enter either a newspaper office as a flyboy, or a commercial, or job shop as a feeder. The training, character of work and opportunity for advancement in the two types of offices differ.

Newspaper Offices

As a rule, the boy who enters the newspaper pressroom serves five years as a flyboy before he is registered as an apprentice. However, if there is a vacancy among the apprentices and there are no flyboys who have served five years, the boy who has served the longest period is promoted. The apprentice must serve three years before he is eligible for the position as pressman on a newspaper press. The fact that he has served five years as a flyboy and three years more as an apprentice is no guarantee that he will become a journeyman at the end of that period. He must wait for promotion until there is a vacancy among the pressmen, or until there is a new position created as a result of an increase in the volume of business.

Since the newspaper pressrooms in New York City are almost entirely manned by union workers, the union records give an accurate picture of the training of the pressroom worker. According to these records there are about 336 flyboys and 100 pressroom apprentices. During the last three years an average of twenty apprentices were made pressmen each year, making room for a corresponding number of flyboys to become apprentices. During the same period an average of thirty flyboys were taken on each year, in order to fill the vacancies caused by the promotion of flyboys to apprentices, and by the dropping out of those who became discouraged.

Nearly all the boys who enter the pressroom are eighteen years of age and are physically strong. They are paid from $12 to $15.50 a week during the eight years they serve as flyboys and apprentices. The maximum number of apprentices allowed in any newspaper office is five. No systematic instruction is given them in the newspaper pressroom and any knowledge which they

acquire must be picked up. In an attempt to remedy this defect, the Newspaper Pressman's Union has recently organized a class in the theory of presswork for the flyboys, apprentices and pressmen in newspaper offices.

After a boy becomes a pressman he may, after a number of years, become a pressman in charge. In the newspaper pressrooms there is a pressman in charge for each machine. The chance to gain promotion to this position is about one to five, as there are usually five pressmen for each pressman in charge.

Commercial Shops

In commercial shops having both job and cylinder presses, the boy who desires to become a pressman has to enter as a job press feeder. In shops with only cylinder presses or cylinder and web presses, the boy begins as feeder on a cylinder press. There is no definite period of training in the commercial pressrooms and a boy may work there all his life and yet never become a pressman.

If a boy enters the trade as a job press feeder, his chance for advancement is very slight, as only a small per cent of the job press feeders are promoted. A study of the records of Job Press Feeders Union No. 1, reveals the fact that during the year 1916, out of 546 members only twelve became job pressmen, and thirty-six became cylinder press feeders. The previous year, out of a membership of 460 feeders only two became job pressmen and twenty-five became cylinder press feeders. Many of these boys, after remaining at this work five or six years, become discouraged and go into other occupations. During the past year ninety-four (dropped out) from the union, eighty of whom entered other occupations. The following table compiled from the records of the above organization gives certain data as to the number of union job press feeders, number taken, number suspended, etc., during the past three years:

	1914	1915	1916
Number in Union	378	460	546
Number promoted to Job Pressmen	2	2	12
Number promoted to Cylinder Feeder	21	25	36
Number of withdrawals	9	1	27
Number suspended	14	41	67
Number new members	95	113	238

The job press feeders in the Union are from sixteen to twenty-five years of age. They receive a salary of $12.50 a week.

It is estimated that there are about 1,500 job press feeders in non-union shops. The opportunity for advancement seems very small, partly for the reason that a large percentage of the shops are equipped only with platen presses.

In union shops, cylinder press feeders are not considered apprentices. When a feeder is made an apprentice he is taken from the feeding board and put on the floor to assist the pressman, and must serve four years in this position before he becomes a journeyman. In some shops, when a cylinder feeder is made an apprentice to the cylinder pressman, a job press feeder is made an apprentice to a cylinder press feeder and serves four years in this capacity before he becomes a cylinder press feeder. Only one apprentice is allowed for every four cylinder pressmen and no chapel or shop is allowed more than five apprentices. A large percentage of the cylinder press feeders and apprentices come from the ranks of the job press feeders. Many of these men work as cylinder press feeders for years before they become cylinder press apprentices.

The cylinder press feeder may become an assistant on the book and magazine web press, but if he does he can never become a book and magazine web pressman unless he returns to the cylinder press and spends four years as an apprentice. This is due to the rule that all book and magazine web pressmen must come from the ranks of the cylinder pressmen. As a result of this rule very few cylinder pressmen ever have experience on the book and magazine web press before they become pressmen in charge of this type of press. The assistant on the book and magazine web press is the only person who is trained in the care and operation of the machine under the direction of a pressman, and he is not allowed to become a pressman on this press unless he returns to the cylinder press, as a feeder or apprentice, and waits until there is an opportunity for him to become a cylinder pressman.

As a result of the above mentioned rule, and the fact that present conditions in the modern pressroom require the services of two or more feeders to one pressman, the opportunity for promotion for the feeder is not very promising. The cylinder feeders in union shops are paid $18.00 a week, and this wage in the past has been sufficient to secure the requisite number of workers. The records of the Franklin Cylinder Pressfeeders' Union No. 23, show that during the year 1916, forty-nine men out of a membership of 2,540 were promoted to the position of pressmen. During

the previous year, twenty-eight men out of 2,325 were promoted to the same position. These figures show that less than 2 per cent. are promoted annually.

The following data was compiled from the records of the above union:

	1914	1915	1916
No. in Union	2200	2325	2540
No. promoted to Cylinder Pressmen	42	28	49
Withdrawals	50	54	70
Traveling Cards issued	58	60	64
Travelers received	..	..	60
Deaths	24	25	28

WEEKLY WAGES OF COMMERCIAL AND NEWSPAPER PRESSROOM WORKERS

Kind of Work	Day		Night	
	Union	Non-Union	Union	Non-Union
Commercial Shop:				
Job Press Feeder	$12.50—	$7—$12.50	$15—	$7—$15.00
Cylinder Feeder	$18.00—	$7—$18.00	$20—	$7—$20.00
Web Press Assistant	$19.00—$22.00	$15—$22.00	$20—$23.00	$15—$23.00
Job Pressman	$20.00—$27.00	$12—$20.00	$22—$29.00	$13—$29.00
Cylinder Pressman	$26.00—$28.00	$18—$26.00	$28—$30.00	$18—$30.00
Cylinder Pressman (on color)	$28.00—$36.00	$20—$36.00	$30—$38.00	$20—$38.00
Book and Magazine	$33.00—$37.00	$25—$37.00	$35—$37.50	$25—$37.50
Newspaper Offices:				
Flyboy	$12.00—$15.00		$12—$15.50	
Pressman	$27.00		$28	
Pressman in charge	$33.00		$34	

The wages paid pressroom workers in New York City are somewhat lower than those paid to the composing room employees. The figures shown in this table for the union shop employee represent the wages provided for in the scale and are the wages commonly paid, although a small per cent of the men receive wages above the scale. Where two figures are given the

larger represents the wage paid for operating more than one press or certain types of presses. The newspaper pressrooms are 98 per cent organized and all the newspaper pressmen receive the union scale of wages.

The chart also shows the minimum and maximum wages paid in the non-union shops. The information concerning the wages paid non-union workers was collected by the members of the survey staff and the figures checked by the conference committee appointed by the printing trade organization. A small per cent of the employers of the non-union workers pay the union scale of wages, but as a rule the average wage paid in the non-union shops is much lower than the wage paid in the union shops.

NEWSPAPER PRESSROOMS

In the newspaper offices the conditions of employment are somewhat different from those found in the commercial shops. Here the types of presses are uniform in each office. The work is heavy and the demand that editions be out on the street as quickly as possible necessitates constant hustle and rush and requires the pressroom worker to be quick and strong.

The pressman in charge must thoroughly understand the machine he has in his care; he must be alert and a quick thinker, able to detect and remedy trouble instantly.

Some presses have what is called a fudge cylinder; it is a separate unit in itself used to print the summary of a story, or baseball scores, three or four minutes after the story is received at the office. One New York office makes it a practice to sell an edition with the full score of the game to the fans coming out of the Polo Grounds who have just witnessed the game.

The presses in the newspaper offices are the largest built, consisting of thousands of parts and costing thousands of dollars, and it is consequently very essential that the pressman in charge be a very competent mechanic.

The steady force in a newspaper shop is limited to the number of positions required for the smallest sized sheet. There are extra journeymen and flyboys, known as "subs," who report daily at the office, and if the size of the paper to be published that day necessitates extra men, or subs, they are put on for the day. Some of these subs report at one office for years before they are classed as steady men. They are hired according to a priority list estab-

lished in each office. Usually as high as 30 per cent of the force of a newspaper office are on the sub list.

In the following pages an effort has been made to indicate what the pressroom workers do, and in each case the knowledge necessary for the performance and comprehension of the work.

CYLINDER PRESSMAN

The cylinder pressman adjusts the plungers and gibs of the air cushions. The functions of the air cushions and plungers are to overcome the momentum of the bed as it reverses. The power stored up in the air cushion by compressing the air gives impetus to the press bed on its return stroke. The plungers are properly adjusted when the bed moves over the center smoothly. These plungers are changed on their rods when the speed of the press is changed, and here the pressman with a slight knowledge of mechanics goes about his work in an intelligent manner.

He then adjusts the cylinder to the bearers of the bed, which keep the cylinder from riding on the form. These are set by allowing a light to shine through the opening between the cylinder bearers and the bearers of the bed, and gradually setting down the cylinder on the bed bearers by adjusting the impression screws until all light is shut off. When this is done on both sides, a little more pressure is added so that the cylinder will ride snugly on the bed bearers. Another method is to put a piece of thin tissue paper between the bearers and bringing the cylinder down until there is a good "bite" on the paper. The bed bearers should be type high, which is 0.918 inch. A pressman must note the number of threads to the inch of all screw adjustments, in order to know exactly just what change each turn of the screw will make. The gibs are next looked after, and the pressman should know how to adjust them so that they will not bind.

Packing a cylinder is the next step in getting the press in condition, and too much care cannot be taken in this operation. The packing of a cylinder press generally consists of a press-board and a manila sheet, tough but smooth, clamped on one end and wound around the first reel. This manila sheet is shrunk on in most cases by wetting with a sponge and water and letting it dry. On this are placed five or six sheets of calendered stock, termed hangers, and a smooth manila sheet as a top sheet. The completed packing should stand one thin sheet above the cylinder bearers.

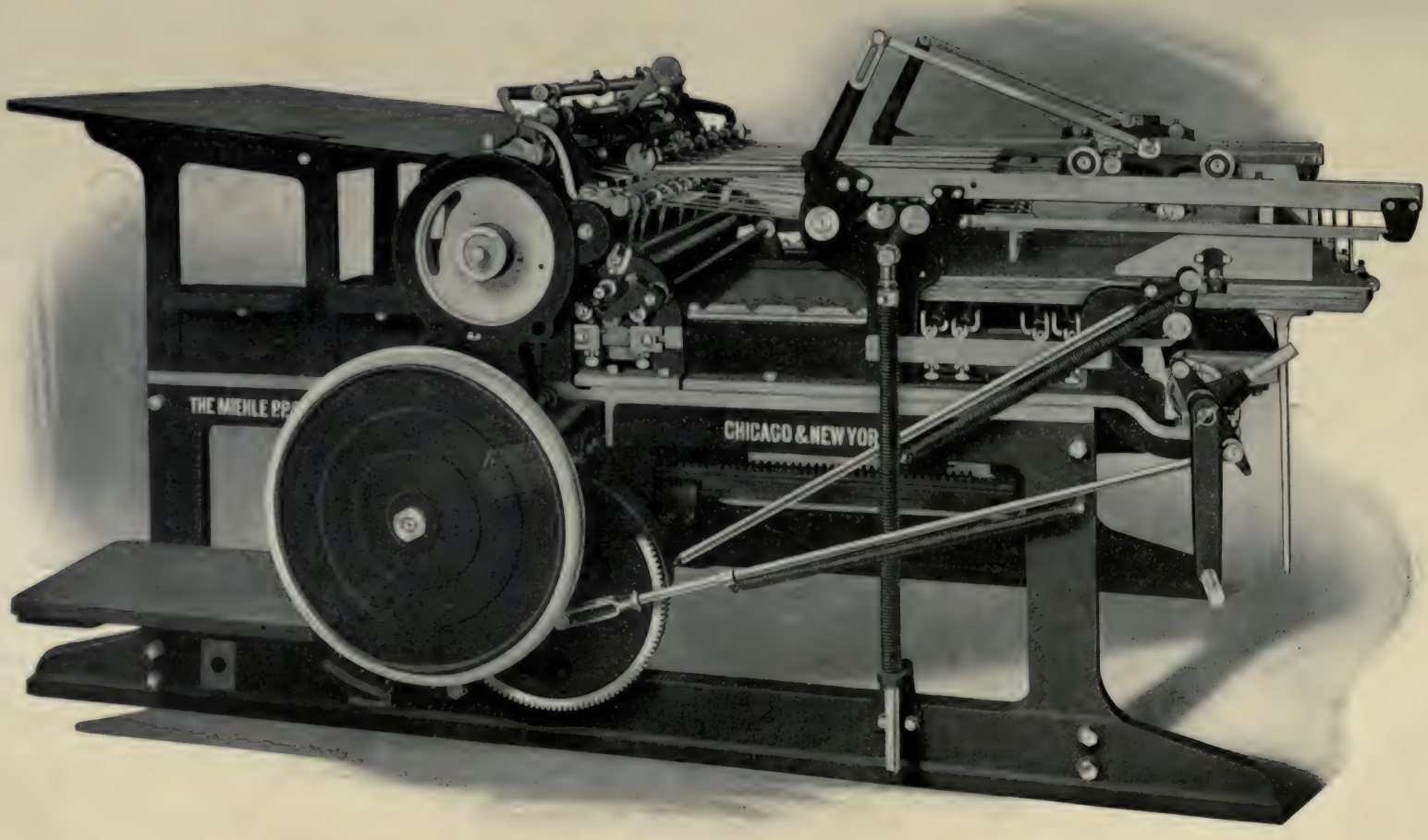
This, as a rule, gives the right impression. A pressman should know how deeply the cylinder is cut below the bearers and with this information to start with he can, with the use of a micrometer, measure his packing for the right thickness. An overpacked cylinder will cause trouble, such as poor register, worn forms, packing pulling from the gripper edge, etc.

To make the cylinder and bed travel in harmony, a segment of a gear is connected to the cylinder, and a gear rack, known as the register rack, is attached to the bed. The pressman should know how to set these in proper mesh so that the bed rack drives the cylinder smoothly. If this rack is not set properly good register is impossible. The function of the register rack is to start the bed and cylinder in harmony at the beginning of the printing stroke.

The form is next put on the press. The pressman should know just how far the form can come to the end of the bed without hitting the grippers when the press starts to print. This can be learned by pasting a sheet of paper over the top sheet and pulling an impression on it, care being taken to open the clamps so they do not batter the form, and also closing the clamps when they clear the form again to prevent hitting the opening tumbler when they come up. If the form is out too far it will show on the sheet, and by this method a line can be found to which the form should be brought. This is generally marked on the bed of the press. The form should be back far enough to clear the fourth form roller when the bed is run back, for if not, this will show a streak on the printed sheet.

In order to lock the form on the press, the pressman must be familiar with all of the furniture used in the composing room, as well as reglets, leads, slugs, and quoins. He should be familiar also with the printer's point system and understand imposition. In tightening a form he must be careful not to spring it, as the form must be flat on the bed. In many of these adjustments there are numerous little tricks that can be picked up only through experience.

The pressman should know how to set the fountain blade, which bears against the steel duct or roller. This blade is pressed upon the roller by screws. Care must be taken not to buckle the blade and the best method is to set the pressure from the center to each end. The more the pressure the less ink can be fed to the roller. The roller feeds forward a fraction of a revolution accord-



A MODERN CYLINDER PRESS

ing to the adjustment of a ratchet at the side. The best practice is to set the ratchet for a considerable movement like five or six teeth and to adjust the fountain blade to allow only a thin film of ink to feed to the roller.

The rollers are set by screw adjustment so as to cause a flat of about one-eighth of an inch. If set down too hard they cause a drag which shows on the plate and sheet. This is due to the fact that the rollers do not travel as fast as they should, due to the decrease of the radius caused by tightening the roller too much.

The grippers are set by putting two sheets under the stop and one under each gripper and then closed hard enough to have a good grip on the paper and so that all pull alike. An uneven gripper affects the register.

The shoeflies which raise the sheet over the strippers are next set. The sheet bands should be set to touch the cylinder lightly and keep the sheet smooth and prevent it from wrinkling. The stop guides should be set to raise just as the grippers close on the sheet. The side guides are set for the size of a sheet and placed to keep the sheet square. The fly fingers, or delivery grippers, are set to deliver the sheets in a straight pile. All these adjustments are important and time must be taken to learn how to make them properly.

At this point the pressman begins the make ready. An impression is pulled to see how the form prints. This impression shows any weak spots in the form or packing and whether the entire form is type high or not. If the form is not type high, he underlays it by placing patches of paper under the form wherever the impression is weak. An underlay is only to bring those parts of the form that are low, type high and not to make up for deficiencies in the packing. A pressman who tries to make up for such deficiencies in this way finds himself in trouble before the run is off the press. In these days when the composing room makes new type for nearly every job very little, if any, underlaying is needed, except for cuts.

If half-tone cuts are in the form, a cut overlay will be necessary. A half-tone cut consists of solids, medium shades and high lights. These high lights consist of fine dots and are in the same plane of the plate as the solid. If the same pressure was put on these dots as on the solids, the dots would soon flatten out, causing the high lights to fill up. The function of the overlay which consists of patches of paper on the impression cylinder, is to give

additional pressure to the darker tones and at the same time easing off on the high lights. The overlay is put upon a shrunk sheet and a hanger dropper. After the overlay is in place, another impression is pulled and the pressman marks out a "spot up sheet," to bring out any weak places in the packing. In this work great care must be taken since too much packing on one spot will have a tendency to bear off on other spots, making them light. As each spot up sheet is added to the impression cylinder, a hanger is taken off. When the impression is satisfactory the press is ready to run.

Considerable time is required to make a hand-cut paper overlay properly and a number of patented overlays have been introduced. One of the most successful of these is known as a chalk overlay. This overlay consists of a special waterproof sheet of paper coated on both sides with chalk. A proof of the form is pulled, with special ink, on this prepared sheet. The sheet is then dipped into a pan containing a lime solution that etches away the chalk that is not protected by ink. The lime solution is kept at a certain constant density to obtain the best results and the pressman tests this solution with a hydrometer. Chalk overlays are being used in a great many pressrooms throughout the city.

All pressmen need to know the qualities of the various inks used and how to reduce them and, except in the case of the rotogravure pressman, should understand the composition of the rollers and the care necessary to preserve them. All except the newspaper pressman who deals with only one kind should be familiar with the different grades of paper used and their qualities. All should understand the elementary phenomena of static electricity and be able to eliminate its disturbing effects in the pressroom. With the exception of the platen and rotogravure pressmen they all need to know how to pack the impression cylinders and how to adjust the fountain blade. All except the offset and rotogravure pressmen must be able to make underlays and overlays and all but the rotogravure and newspaper pressmen to mix colored inks to match proofs sent from the art room.

Pressmen require little mathematics; all need familiarity with common fractions to 64ths and decimals to the thousandth place and all need sufficient knowledge of mensuration to measure simple plane surfaces, such as squares, and circles in respect to circumference and diameter.

All except the rotogravure pressmen need to know how to use

the micrometer and all but the offset and newspaper pressmen should be able to read the hydrometer. All should be familiar with the printers' point system, and all should know something of the simple chemistry of inks and paper. All should understand the simple mechanics of liquids and gases as well as the principles involved in the action of cams, levers, screws and gears. Speed and accuracy are required of the pressman in setting cylinders, rollers, guides, stops, fountains, grippers, etc., and facility in handling the micrometer and hydrometer and making measurements accurately.

The temperature of the pressroom should be kept about constant 70 deg. Fah. to 75 deg. Fah. as the atmospheric conditions affect the rollers, ink and paper, causing picking, offset and poor register.

Significance of the Occupation

There are about 2,500 cylinder pressmen in New York City. Of this number about 1,800 are in the pressmen's union. The cylinder pressman's job is important as it is the stepping stone to the higher positions in the pressroom. A cylinder pressman may become a rotary, web, rotogravure or offset pressman in a commercial shop. The number of cylinder pressmen has not increased with the volume of business, as the web press is now doing much of the work previously done by cylinder presses. The cylinder pressman can obtain all of the practical knowledge necessary for this position in the shop, but the technical knowledge needed for full comprehension of the work and for advancement must be secured on the outside.

CYLINDER FEEDER

The cylinder feeder puts rollers into the press and takes them out. He oils and cleans the rollers and press, patches up sheets and helps the pressman make register. He piles paper on the feed board, and combs it down in order to lift one sheet at a time in feeding. He feeds sheets to drop guides and then gently slides them to side guides. He trips the press when he misses a sheet in order to prevent the form from printing on the impression cylinder. He attends to the automatic feeders and helps the pressman in a general way.

In oiling it must be remembered that a new press needs oiling

more often than an old one. Prominent bearings should be watched closely to prevent warming up. In cleaning a press it is necessary for the feeder to acquire the habit of doing the job well. In leaving a press it should be clean enough to run on a color job if necessary. The method generally used to clean a job press is to sprinkle some solvent upon the cylinder or plate and rollers which is then distributed by running the press for a few minutes. The rollers are then removed, and they, as well as all other parts of the press, are wiped clean and dry. When a press feeder leaves his press at night it should be thoroughly clean.

In cleaning the rollers, the feeder should be familiar with their composition so as to know how to protect them from injurious treatment. He must know how to patch up sheets marked out by a pressman, and how to match cut overlays. He should be familiar with the furniture used in a composing room to help the pressman lay the form on the bed of the press, and in making register. Good register depends a great deal upon whether a sheet is fed to the guides properly or not, and considerable skill is required in feeding large sheets. The feeder must be particularly careful in feeding sheets that have been printed on one side to place them on the feed board in the right direction. If the feeder misses a sheet, he trips the press. That is, by the use of a lever worked with his foot, he lifts the cylinder off the form, thereby preventing the form from printing. If he did not do this the form would print on the cylinder packing, and the next few sheets printed would have an offset on the reverse side. The cylinder feeder is sometimes called upon to operate the automatic feeders.

For his immediate work the feeder needs little beyond the requirements as indicated. If, however, he is to prepare for promotion, he must study and equip himself with the knowledge necessary for the pressman.

Significance of Occupation

There are about 3,500 cylinder feeders in New York and about 2,000 of these are in the Assistant's Union. The work is fairly constant and the wages high enough to hold most of them in this position. The line of promotion is to assistant on the web press, or to cylinder pressman, but the chances for promotion are slight, as a study of union records shows that less than two per cent are promoted annually. The number of positions are not increasing,

due to the fact that the web press is being introduced to do the work of the cylinder press. The practical knowledge for the work can be secured on the job, but the technical knowledge for a thorough comprehension of the work or for promotion, must be secured from some outside agency.

MAGAZINE OR BOOK WEB PRESSMAN

In getting the press ready for a job the web pressman sets cylinders, rollers, knives, slitters, fountains, guides, stops, points, angle bars, etc. He measures packing and packs the cylinders. He pulls proof for an underlay, if an underlay is needed, and he marks out the sheet for it and underlays the plates. He registers the plates as to color and margin. If using a half-tone he pulls the proof for an overlay, cuts and matches it and overlays the plates. He next pulls a proof for spot-up sheets, marks it out, and puts the spot-up sheets over the overlay. He then covers the cylinder. He mixes colored inks to match proofs sent from the art room and keeps the color and impressions even. He adjusts all working parts of the press and examines printed product for spoiled sheets. He is in charge of the men under him and is held responsible for the output of the press.

In addition to the knowledge required of the cylinder pressman, the web pressman should know how to figure the amount of packing that is required on the impression cylinder. To do this he multiplies the number of teeth on the impression cylinder gear wheel by the circular pitch of the teeth—the pitch being stamped on the gear. This multiplication gives the pitch circumference, or printing line. He then measures the bare cylinder with a steel tape to obtain its circumference. By dividing each of these circumferences by pi (3.1416) he obtains their diameters, and one-half the difference between these diameters gives the thickness of the packing necessary to bring the impression cylinder up to the pitch line, or even with the bearers. The pressman generally adds about 0.003 of an inch to this amount for impression.

The plates are next put on the web press, being held down snugly to the cylinder by means of clips. The secret of good printing and long runs on a web press is that the circumference of both the plate and the impression cylinders should be equal, that the cylinders should be parallel, and run in harmony with each other.

The plates used on book and magazine web rotary presses for long runs are generally electrotype plates. Such a plate is made from the flat type form that has been set up in the composing room, by taking an impression of the form in wax under pressure. This wax impression is given a coating of graphite and also a coating of iron filings and sulphate of copper and is then put into the electrolytic bath, where a film of copper is deposited upon it. This sheet of copper is backed up with a composition consisting of tin, lead and antimony. When thus strengthened it is put through a curving machine, which bends it into semi-circular form to fit the plate cylinder.

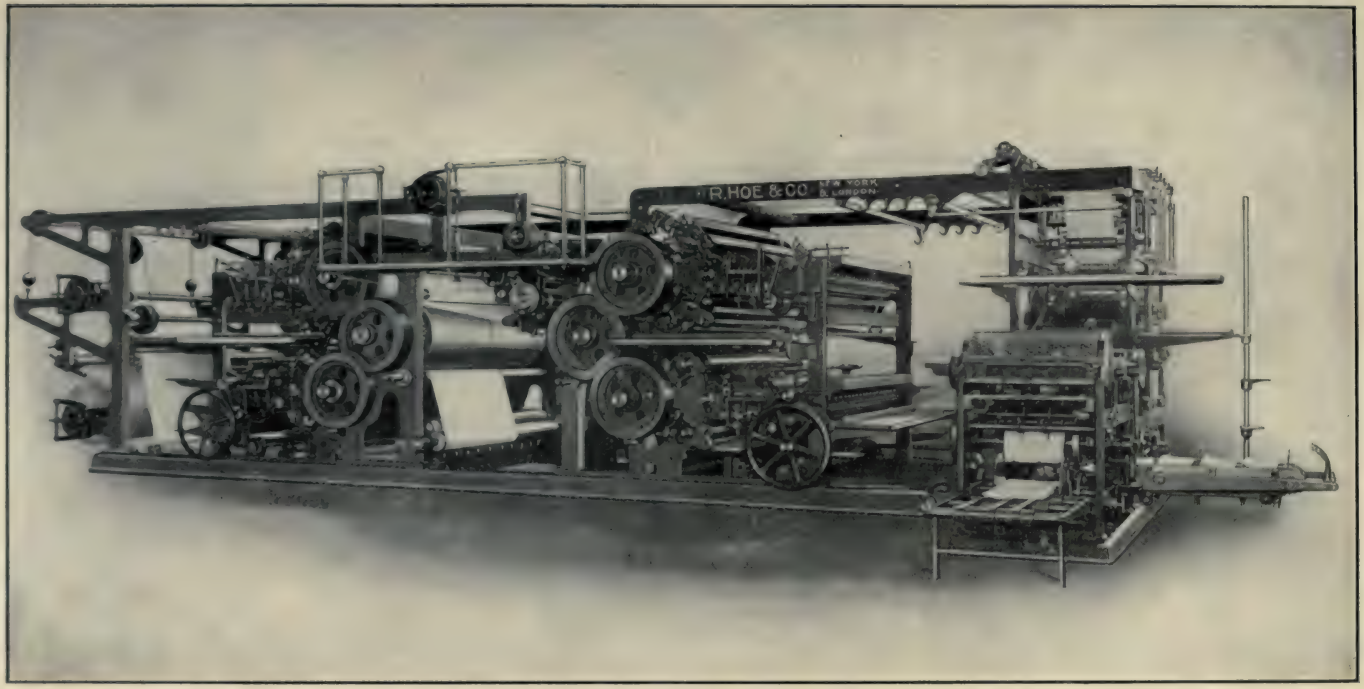
Certain colored inks set up a chemical action when in contact with copper faced electrotype plates, which on long runs destroy the face. A pressman should study these inks and know when to tell the electrotyper to steel face the plates.

The pressman next sets the rollers, which are adjusted by screws and should be set to get about one-eighth of an inch flat on them. If not set even the rollers soon give out, on account of too much friction. In the case of form rollers, each must be set with the same pressure against the distributing cylinders and the plate cylinders, as both of these surfaces are timed so as to run together. If the roller is set harder against one of these than the other there will be a drag on one of the surfaces, resulting in friction, which in turn generates heat. This soon causes a loss of the roller as well as a poorly inked plate.

The web pressman sets his trolleys, which help to propel the sheet along so as to have an even pull. In setting a slitter the flat edge should be set snugly to the side of the groove, causing the slitter and roller to cut the sheet similar to the cut given by a pair of scissors. If not set this way the slitter tears the sheet in a ragged edge.

The angle bars must be set at a 45° angle, thus insuring an equal pull, unattainable at any other angle. The nipping rollers are set to help the sheet along, and to insure an even fold. Folding blades should be set so as to tuck the sheet between the folding rollers, which must be set to crease the sheet into an even fold.

Gripper points must be timed to take the sheet and release it at the proper moment, otherwise the sheet will be torn. These must be set even and not too far out. The fly pans must be set to send the papers out on the strap in an even row.



BOOK AND MAGAZINE WEB PRESS

If the packing was perfect and the plates perfect, the pressman could now go ahead and print, but this ideal condition is never present; therefore, what is known as the make ready has to supply deficiencies in the plates and packing. On web presses very little underlaying is done. If the press calls for a plate 0.250* points thick, the foreman generally has them cut down to 0.247 points and adds a 0.003 point sheet under them, so that if the plates are high in any one spot he can cut out from under the plate, or, if on the run the high lights are beginning to fill up, he takes this sheet from under the plate.

A web pressman needs to know rather more about mechanics than the cylinder pressman, particularly as regard the calculations and action of gears.

Significance of the Occupation

There are about 400 magazine and book web pressmen in New York City; of this number about 300 are in the pressmen's union. The number of positions in this line is growing in importance, due to the increase in the volume of work done upon these presses. A man competent to fill this position should be a first class mechanic. Practical knowledge is generally gained in the shop. The technical knowledge needed for full comprehension of the work must be gained through some outside agency.

ASSISTANT ON MAGAZINE OR BOOK WEB PRESS

The web press assistant puts the rollers into the press and removes them. He takes a roll of paper ready for the press, puts it on the spindle and locks it into place so that it will not come loose when the press is running. When a roll of paper is exhausted he removes the paper core from the spindle. He cleans and oils the rollers and press, keeps the fountains filled with ink, leads the paper through the press, patches up, helps make register as to color and margins, and assists the pressman in underlaying and overlaying the plates. The feeder runs the brake and tensions and helps the pressman in a general way.

The feeder has charge of the rollers on the web press, and as these rollers are of different diameters and lengths he must know where each roller goes. He should know the names of the different parts of the press. He should understand imposition, how to adjust the spring rollers to the size of the paper rolls and

* Points here refer to 0.001 of an inch.

how to run the brake and regulate the tensions to keep the waste at a minimum.

The assistant in book or magazine web press, although not in direct line of promotion to pressman, occupies a position of some responsibility, and in order to do his work effectively needs to possess a large part of the knowledge required by the pressman.

Significance of the Occupation

There are about 700 assistants on the web presses in New York City and of this number about 500 of them are in the Assistant's Union. The chance of promotion is very slight, but the wages paid are high enough to attract men to the position who are willing to stay in it. The number of positions are increasing because of the increase in the number of web presses. Practical knowledge can be gained in the shop, but the technical knowledge necessary for full mastery of this job must be gained outside of the shop.

ROTOGRAVURE PRESSMAN

The rotogravure pressman puts the etched cylinder into the press, sets cylinders, doctor blades, compensating rollers, guides, stops, grippers, etc. He registers cylinders for margin, adjusts the impression cylinder for impression and sharpens and regulates the amount of pressure on the doctor blade. He keeps the ink at a certain constant density and adjusts all the working parts of the press. He examines the printed product for spoiled sheets and is responsible for output of the press.

In putting the cylinder into the press, the pressman sets the impression cylinder down and tests for the proper position by means of paper between the cylinders. If the cylinder is deeply etched he adds more impression. The impression cylinder is driven by friction, and the size is not built up to the same circumference as on other presses. The pressman should know how to sharpen and set the doctor blade. This blade presses on the surface of the etched copper cylinder, scraping all of the ink from unetched portions which represents the blank parts of the printed sheet. The pressure of the blade on the surface of the plate is adjusted by weights, and great care must be used in setting the doctor blades so as to not have it wear too quickly. The more often a blade is changed the quicker the plate wears.

The pressman should know how to tell the proper density of the ink, as this must be kept constant. The ink is thinned by a very volatile substance which evaporates quickly. When the ink becomes too thick the pressman adds xylol to thin it. The pressman should know what a well printed sheet is and how to detect and remedy trouble. The mechanism of a rotogravure press is about the same as a web press, and what applies to the mechanical requirements of a web pressman also applies to a rotogravure pressman.

Significance of the Occupation

There are about 100 rotogravure pressmen in New York City. Of this number about 75 are in the Pressmen's Union. The line of promotion is to foreman. This position has only been created within the last few years and is bound to increase in numbers due to the high class of work done by these presses and also on account of their increased speed, as in other cases, practical knowledge can be gained in the shop, but the technical knowledge must be gained outside.

ASSISTANT ROTOGRAVURE PRESSMAN

The assistant helps to put the cylinders into the press, gets the rollers ready for the press, keeps the press supplied with paper and removes the empty paper cores. He cleans and oils the pipe rollers and press, fills the ink, fountains, leads the sheet through the press and runs the brake and tension. He helps pressmen in a general way.

He needs the same equipment as the assistant on the magazine and web press.

OFFSET PRESSMAN

The offset pressman sets cylinders, distributing and form rollers; water and ink fountains, guides, stops and automatic feeders. He puts plates on the plate cylinder and packing on the packing cylinder. He washes off the prepared plate and pulls proof for register, registers plate, color and margins and, if necessary, etches blank part of plate, and gives the design a coating of asphaltum. He keeps the rubber blankets clean, sees that the color and impression are even, mixes inks to match proofs sent from art room and adjusts all working parts of the press,

including automatic feeders. Finally, he examines all printed copies for spoiled sheets, and is responsible for the output of the press.

The offset pressman should possess the requirements for a cylinder or web pressman. He should also know how to regulate the water fountain and run the press with a minimum amount of water, in order that the design will print best. He should know how to register for colors and margins by shifting his plate, paper file or cylinder. He must keep the ink from scumming up the plate, which will happen if the ink is too greasy. The pressman should know how, by the aid of an acid solution in the water fountain to keep the blank parts of the plate clean. If the design becomes weak he should know how to apply a coating of asphaltum to strengthen it. He should know how to add acid resist to the design and re-etch the blank parts of the plate.

The offset pressman, furthermore, should understand the composition of the blankets in order to renew their vitality. He should know how to mix colors so as to match a given proof, and how to regulate color. He should have a knowledge of the properties of the zinc and aluminum printing plates. He should know the names of all the parts of the press and have a knowledge of its mechanism that he may make necessary adjustments, including those on automatic feeders. Finally, he should know what a well printed sheet is and how to detect and remedy trouble. He is responsible for the output of the press.

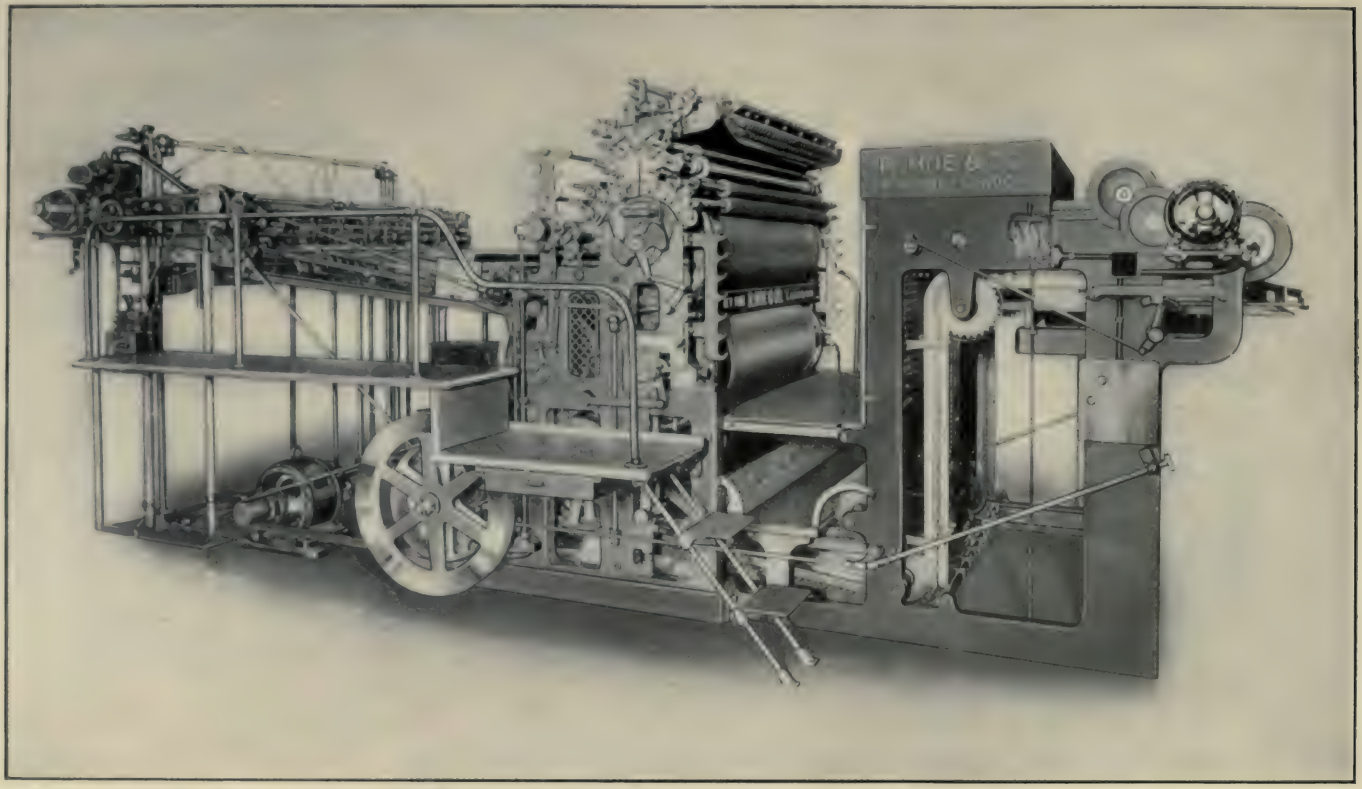
Besides the knowledge of fractions and mechanics required by the cylinder pressman, he should be familiar with the apothecary system of weights and measures in order to mix etching solutions and should understand the chemical action that takes place when acid solutions and metal interact.

Significance of the Occupation

The number of positions of this kind is increasing on account of the substitution of presses using zinc and aluminum plates instead of the stone process. The technical knowledge necessary for this position is greater than for an ordinary cylinder pressman. The practical knowledge can be learned in the shop, but much of the technical knowledge must be gained on the outside.

ASSISTANT OFFSET PRESSMAN

The assistant offset pressman puts the rollers into the press



OFFSET PRESS—AUTOMATIC FEED-PILE DELIVERY

and takes them out. He oils and cleans rollers and press and assists pressman in cleaning blankets and gumming up plates. He helps pressman put blankets on cylinders and helps make register as to margins and color. He piles paper into the feed board and feeds it down to the guide. He attends to the automatic feeders and assists the pressman in a general way.

The assistant offset pressman should know the names of all the different parts of the press, and should know how to put the different rollers into their respective places. He should understand the composition of the rollers used so as to be able to clean them without destroying them. If nap form rollers are scraped the wrong way the nap is injured, thereby destroying the roller. He should know how to clean the blankets and gum up a plate. In oiling it must be remembered that a new press needs oiling more often than an old one. Important bearings should be watched closely to prevent their becoming too warm. He should know how to feed sheets down to the guides properly. He should know how to operate the automatic feeder.

The knowledge required for his regular duties is indicated above. To prepare for advancement the assistant must equip himself to meet the requirements of the pressman.

Significance of the Occupation

There are about 100 men engaged in this work in New York City, about one-half of whom are members of the union. What has been said about the assistant on a magazine and book web press applies here.

JOB PRESSMAN

A job pressman is called upon nowadays to operate small sized cylinder and rotary presses as well as platen presses. He sets either platens, cylinders on bearers or cylinders, according to the type of press operated. He sets rollers, grippers, guides, stops and automatic feeders. He locks form or plate to the bed of the press or plate cylinder, pulls a proof for an underlay, underlays plate or form, if underlay is needed. He next makes register for margins and color. If working on half tones, he pulls a proof for an underlay, cuts and matches overlays and overlays form or plate. He pulls a proof for a spot-up sheet, marks out a sheet for a spot-up sheet and puts it on the cylinder.

He covers up the platens, or cylinder, keeps color and impression even, mixes colored inks to match a given proof, examines the printed sheet and adjusts all working parts of the press.

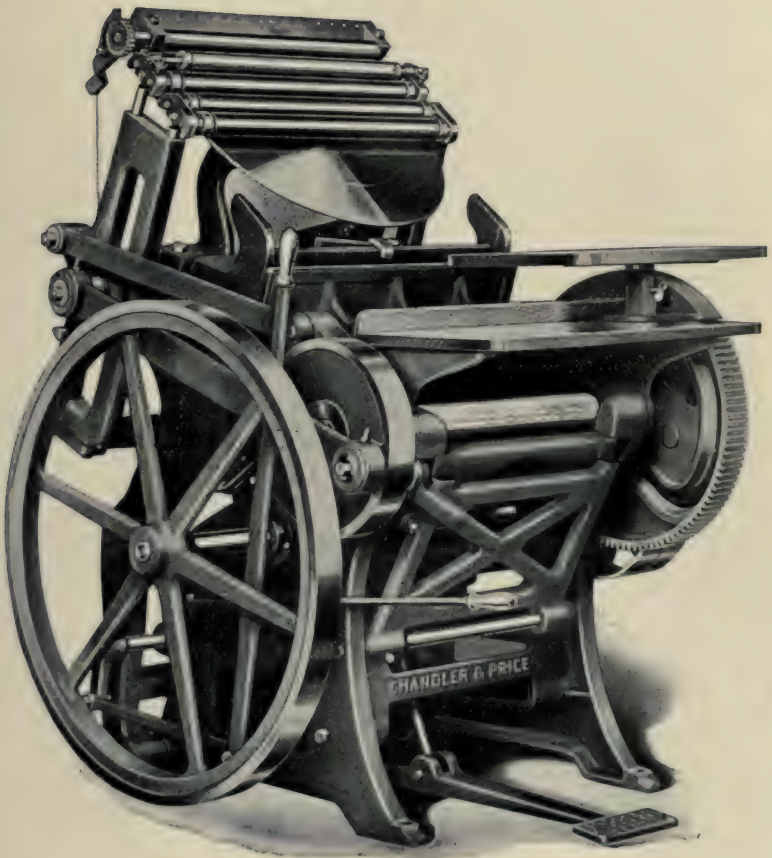
If the pressman is operating a platen press, he should know how to set the plates so as to obtain an even impression over the whole surface of the form. This is done by putting the proper packing on the platen and adjusting the top screws. The bottom screws are very seldom touched, as the impression at this point is regulated by the amount of packing. In putting the form on the press, the pressman sees that the clamps are tight. The duties of a job pressman from this point on, are about the same as those of the cylinder or rotary pressman, except that his machine is a very small one. For knowledge required, see "cylinder pressman."

Significance of the Occupation

There are about 1,000 job pressmen in New York City. Of this number 327 are members of Printing Pressmen's Union No. 51. On account of the introduction of automatic feed job presses the demand for job pressmen is not increasing. Some of the automatic job presses do the work of two or more hand fed presses. The chances for advancement for a job pressman are slight, as a very small number become cylinder pressmen. The wages paid, however, are high enough to attract many workers to this branch of the work.

JOB PRESS FEEDER

The job press feeder puts rollers into the press and removes them. He inks, oils and cleans rollers and press. In inking with a brayer, or knife, no impression of the form should be made until the ink is sufficiently distributed so as not show any streaks on the paper. He helps register forms; patches up sheets marked out by the pressman. He feeds paper into the press with his right hand, first putting the sheet to the bottom guides and then gently sliding it along to the side guides while the press is open. After this sheet is printed he removes it with his left hand, as the press is opening, and starts again with another sheet. When he misses a sheet he trips the press. In a few shops he operates automatic feeders. He examines the printed product, calls the pressman's attention to anything he thinks wrong, and assists the pressman in a general way.



A STANDARD TYPE JOB PRESS

The job press feeder should know how to patch up sheets neatly and quickly, using a minimum amount of paste. He should know how to move the guides to obtain good register. He should also know what a well printed sheet is. For a press with an automatic feeder the operator needs to know how to attend these feeders and make the necessary adjustments.

Quickness and accuracy of movement are necessary, both to feed paper into the press and remove it, since the average press operates at the rate of 1,500 sheets an hour. Skill is required to patch up sheets and to make delicate adjustments for the automatic feeders.

What has been said in regard to the cylinder press feeder applies to the job press feeder both in regard to knowledge required and preparation for advancement.

Significance of the Occupation

There are 500 job press feeders connected with the Job Press Feeders' Union No. 1 in New York City. Of this number, about fifteen are advanced each year to the position of job pressman and about thirty-five to that of cylinder press feeders. The position of job press feeder is most important in the small printing shops of the city. In these small establishments there are about 1,500 job press feeders who are not affiliated with the union. Most of these workers remain in this position, although a number become discouraged and enter other lines of employment. The introduction of automatic feeders is decreasing the number of men in this occupation, since one operator can tend three or four automatic presses. The job press feeder may secure in the shop the knowledge needed to do the work satisfactorily, but the knowledge need for promotion to something better, must be secured through some outside agency.

NEWSPAPER PRESSMAN IN CHARGE

In getting the press ready, the pressman sets cylinders, rollers, knives, slitters, fountains, guides, stops, points, angle bars, trolleys, compensating rollers, etc. He measures packing for the impression cylinders, registers the plates as to margins and regulates and keeps the color even. He adjusts the impression cylinder and keeps the cylinders parallel, and adjusts all work-

ing parts of the press. He examines the printed product for spoiled sheets. He directs the men under him and is responsible for the output of the press.

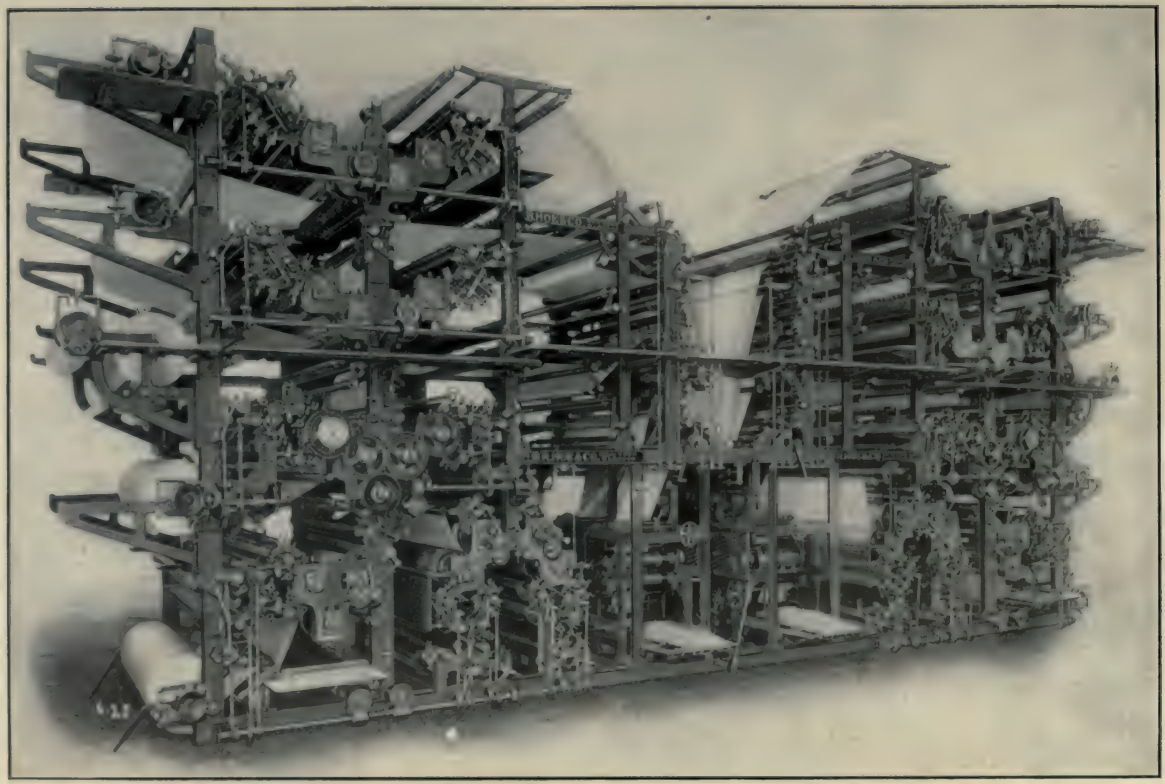
The plates used on a newspaper web press are stereotype plates. A matrix of paper is made, under pressure, from the type form, set up in the composing room. This matrix is bent into semi-cylindrical form and semi-cylindrical castings 7/16" thick composed of tin, lead and antimony are made in the matrix as a mold. The edges are then shaved, the dead metal routed out and the sides trimmed. The plate is then ready for the press.

There are autoplate machines on the market that can turn out three finished plates a minute. Twenty to fifty plates can be made from the same matrix.

The newspaper pressman in charge must set his cylinders parallel and the proper distance apart. Newspaper presses do not have any bearers and it is more difficult, therefore, to set the cylinders on such a type of press. In order to set the cylinders the pressman first multiplies the pitch of the gear on the impression or plate cylinder by the number of teeth to get the pitch circumference. He then measures the circumference of the bare plate and impression cylinders, and divides each of these by pi to obtain their diameters. One-half of the difference of the diameters of the plate cylinder and the gear gives the thickness of plate to be carried; and one-half of the difference of the diameter of the bare blanket cylinder and the gear gives the amount of packing to be carried. To the amount of packing calculated the pressman, due to the soft packing used, adds 0.020 points. This total amount allows for impression and is the amount of packing used. He uses a gauge to set his cylinders, putting it between the two cylinders and gradually letting them down by adjusting the impression screws until the cylinders are at the proper distance apart and parallel. He next measures his packing by the use of a micrometer and has the pressman dress the cylinders.

The directions given under "Magazine and Book Web Pressman" for the setting of rollers, fountain, trolleys, slitter, angle bars, nipping rollers, folding blades, gripper points and fly pans apply equally in the case of the newspaper pressman.

The knowledge required is also very similar. The position of newspaper pressman in charge, however, is one of greater responsibility and he should possess executive ability sufficient to effectively direct the men under him.



DOUBLE OCTUPLE NEWSPAPER PRESS

Significance of the Occupation

There are about 200 pressmen in charge in New York City and they are all in the Newspaper Pressmen's Union. These positions are practically constant on account of the increased output of the new types of presses. Quick thinking is very essential for the newspaper pressman, as indicated by the rule "do not stop the press unless absolutely necessary." A man in this position may become a foreman. Practical knowledge can be gained in the shop, but the technical knowledge needed must be gained from some outside agency.

PRESSMAN ON NEWSPAPER PRESS

The pressman puts rollers into the press and removes them; puts blankets and muslins on the impression cylinders or covers impression cylinder with pressboards, hangers and top sheets and puts plates on the plate cylinders. He underlays plates. He gets rolls of paper ready for the press, keeps press supplied with paper and removes empty paper cores. He cleans and oils rollers and press, fills fountains, leads sheets through the press, patches and keeps fold of the sheet even. He runs the brake and tensions.

He should know the names of the different parts of the press. The rollers are of different sizes and he should know how to put them in their respective places. He should know how to dress cylinders and how to keep them smooth and even. He should know the imposition of the plates so as to get them on in their right places, and in putting plates on cylinder he should be careful not to spring them. He should know how to underlay plates and to patch up sheets marked out by the pressman in charge, and how to lock rolls of paper on the spindles, so they will not work loose when the press is running. He should know the leads of the different sheets through the press, for if the "lead-up" is wrong the sheets will be out of register, and consequently be spoiled.

He oils the press and what has been said about oiling for a cylinder feeder applies here. He should have a knowledge of the folder, as he has to keep the fold of the sheets straight and even. He should know how to carry an even tension, as the register and folds of the sheets, as well as a clean cut, depends upon this adjustment. The tension is adjusted by means of blocks and a screw covering the spindle head, and more tension is applied

by turning the screw which tightens the block. He must adjust the spring rollers, when a change is made from a full to a ¾ or ½ roll. To do this properly some knowledge of the composition of forces is desirable. He should understand the operation of the rheostat controlling the motor for starting and stopping the press.

He should possess in general the knowledge noted in the case of the assistant on book and magazine web press and the cylinder feeder.

Significance of the Occupation

There are about 800 of these men in New York City and all are members of the Newspaper Pressmen's Union. The number of these positions is practically constant, as noted under newspaper pressman in charge. The chances of promotion to pressman in charge is in the ratio of 1 to 5. The practical knowledge can be gained in the shop, but the technical knowledge required must be gained from some outside agency.

FLYBOY ON NEWSPAPER PRESS

The flyboy carries plates to and from the press, leads the sheets down the former and through the folding cylinder and watches folder and former to prevent paper choking up press. He piles papers on tables and carries them to mail or delivery room. He cleans former and folder and compensating and pipe rollers. He fills and adjusts paste fountains and helps the pressman in miscellaneous ways.

He should know the names of the different parts of the press, the leads of the sheets through folder and should know how to adjust paste fountain. He should know the imposition of the plates, so that he can place the plates alongside of the press in position convenient for the pressmen.

Significance of the Occupation

There are about 450 in this occupation in New York City and all are connected with the Newspaper Pressmen's Union. Promotion is not rapid. At the end of about eight years, however, flyboys become pressmen. This is dependent upon the condition

of the business. These boys must be physically strong. The knowledge needed on the job can be learned in the pressroom, but the knowledge needed for advancement must be gained elsewhere.

SUMMARY OF THE TRADE STUDY

The foregoing findings concerning the composing and press rooms of the printing trade of New York City indicates a very large centralized industry that is steadily increasing in numbers and output and constantly making use of new and progressive methods of production. They show an industry in which industrial peace has been the rule for many years, and where trade agreements between employers and employees have been successfully maintained, and trade disputes adjusted through a system of arbitration. They also indicate a situation representing good wages and steady employment and where success and advancement are largely dependent on alertness of mind and a store of both general and specific information. The findings also represent, at least in the composing room, an organized system of apprenticeship, receiving boys at 16 years of age with a regular scheme of advancement. In the composing room this apprenticeship system very largely, supplies the ranks of the adult workers.

On the other hand, the findings indicate that this apprenticeship system is not sufficient to furnish the related technical knowledge demanded for full mastery of the trade with its constantly advancing standards. They also indicate that only in a small range of establishments is it possible for the apprentice to secure the broad, practical experience necessary for the all round skilled worker.

Such a situation seems to indicate that instruction in the nature of pre-employment courses for boys before the age of 16 years would fulfill a helpful function, at least in preparing for entrance to the composing room. The findings also indicate very clearly that instruction arranged for workers already employed and adapted to the needs of the various special departments and various degrees of advancement, would serve a valuable purpose both to the individual trade worker and to the interests of the trade in general.

OUTSIDE AGENCIES FOR THE TRAINING OF PRINTERS

In New York City there are at least eleven different agencies offering courses of instruction to men and boys who are either already at work in the printing trade or who desire to enter it. The duplication and overlapping of courses for beginners, as well as the lack of courses for men who desire advanced work, are clearly shown in a study of these different schools.

Of the fifteen hundred persons taking these courses, over 90 per cent. are men and boys who are already at work in the trade and less than 10 per cent. are boys preparing to enter it.

SCHOOLS ESTABLISHED BY THE BOARD OF EDUCATION

The Board of Education of the City of New York has established trade preparatory courses in printing in the three vocational day schools, and trade extension courses in printing in five evening schools. The organization and methods of these schools are described at some length in Part V of this report. Below is a brief description of the work of each school as it relates to the printing trade. The day courses are open to any boy 14 years of age who either is a graduate of the elementary schools or who can show that he is prepared to take the work by successfully passing an examination given by the principal of the school. These courses are two years in length. The courses in the evening schools are open to those working at the printing trade.

DAY TRADE PREPARATORY COURSES IN PRINTING

Day Vocational School for Boys

The printing department in this school was organized in 1909 and is the oldest trade preparatory course in printing in the city. The original equipment has been added to until the print shops are the best equipped (school print shops) in the city. There are three shops devoted exclusively to printing, i. e., the hand com-

PRESSROOM—VOCATIONAL SCHOOL FOR BOYS

posing room, the pressroom and the linotype and monotype room. The hand composing room is furnished with a poor equipment accommodating twenty boys; the pressroom has five job presses, one modern cylinder press, one stop cylinder press and a paper cutter; in the machine composing room are five linotypes, one monotype, with extra keyboards for the linotype and standard typewriter keyboards for the monotype.

At the time of the survey fifty-two boys were enrolled in this department. The boys spend five periods each day in the shop, and three periods in related work. The shop instruction is individual in character and during the second year boys are allowed to specialize on the linotype, monotype, pressroom work or in hand composition. The course is two years in length, but the diploma of the school is withheld until the boy has worked at the trade six months and his work has been approved by his employer.

There was little attempt made at the time of the survey to teach typographical design, cost estimating or to organize special courses in English for the pupils in printing. The numbers enrolled in this department were so small that it was impracticable to provide teachers with special training to teach related subjects. The limited numbers also made it impracticable to grade the boys according to their previous education or ability in shop work. The students in this department were required, however, to take a course in lettering with the instructor in sign painting.

Six teachers of shopwork are employed in this school; two teachers of hand composition, one of whom acts as head of the department; a teacher of press work, a teacher of bookbinding and one each for the linotype and monotype machines respectively. The cost for salaries for the six shop teachers who give all of their time to the boys registered in printing is $8,000. This department has had since last July an average enrollment of 53 boys.

The work of this department is devoted largely to the printing of records, cards and circulars for the Board of Education. The value of the product of this department amounts to about $1,000 a month.

Murray Hill Vocational School

The printing department in this school was organized February 2, 1914. The department is located in a basement room and

is poorly lighted and ventilated. The equipment consists of the usual small shop hand typesetting equipment, two small job presses, one automatic job press, a paper cutter and stitcher. The course of study includes hand typesetting, straight display and tabular, the imposition of small forms for job work, the care and use of job presses and the operation and care of the automatic job press. The boys spend three periods a day in the shop and four periods a day in book work. At the time of the survey forty boys were enrolled in this department. One instructor of printing is employed who teaches both the composing and press work. The number of boys enrolled in this department is so small that it is impracticable to provide instructors with special training to teach the related subjects, such as typographical design, cost estimating and applied design. The small numbers made it necessary to combine the boys from two trade groups for the work in drawing, English, mathematics and science, and as a result these courses were general in character.

Brooklyn Vocational School

The printing department in this school was organized in June, 1915. The equipment and course of study are practically the same as at the Murray Hill School, with the exception of the automatic press. Forty-six boys were enrolled in this department at the date of the survey. One teacher of printing is employed who teaches both the composing and presswork.

The conditions in this school in regard to the numbers enrolled, the character of instruction are practically the same as those described in the Murray Hill School.

PUBLIC EVENING SCHOOL COURSES IN PRINTING

Harlem Evening Trade School

The Harlem Evening Trade School, which is maintained in the same building as the Vocational School for Boys, has the advantage of the superior equipment of this school and as a result the number of printers enrolled in this school is larger than in any other public school. Courses are given in hand composition and press work, in the care and operation of linotypes and in the care and operation of monotypes. There were 152 students enrolled in the night printing classes. They were employed in the following occupations:

CLASS IN LINOTYPE OPERATING—HARLEM EVENING TRADE SCHOOL

PRESSWORK
(2 classes)

Apprentices	14
Feeders	11
Helpers	3
Pressmen	2
Asst. Pressmen	2
Compositors	2
Washer-up	1
Bookbinder	1
Brakeman on Press	1
Shipping Clerk	1
	38

HAND COMPOSITION
(2 classes)

Apprentices	24
Helpers	7
Feeders	7
Compositors	6
Machine Hands	2
Proof Boy	1
Order Clerk (Printing)	1
Clerk	1
Unclassified	1
	50

MONOTYPE WORK
(2 classes)

Journeymen	17
Two-thirders	3
Monotype Caster and Operator	3
	23

LINOTYPE WORK
(2 classes)

Journeymen	20
Apprentices	12
Two-thirders	6
Linotype Operator	1
Machinist	1
Grocery Clerk	1
	41

MURRAY HILL EVENING TRADE SCHOOL

There were four courses offered for compositors and pressmen at this school at the time of the survey. Two courses were offered in composing room work and job press work, and two courses in the care and operation of the Kelly Press. The courses in composing room work and job press work were sixty nights in length and the courses in Kelly Press work were twenty-four night courses. Each of the two sections of the course in Kelly Press operation was limited to sixteen pupils. Sixty-two students in the four courses filled out questionnaires giving their occupations as follows:

COMPOSING AND PRESS WORK

Apprentices	11
Pressworkers	8
Errand Boys	4
Helpers	4
Proofreaders	2
Compositor	1
Shipping Clerk	1
	31

KELLY PRESS WORK

Pressmen	22
Feeders	6
Pressmen's Apprentices	3
	31

Stuyvesant Evening Trade School

There are two courses in proofreading offered in this school. Each course consists of sixty two-hour lessons. At the time of the survey sixty students had enrolled for this course. Forty-six were in attendance and filled out questionnaires, giving their occupations as follows:

Proofreading
(2 classes)

Journeymen	18
Apprentices	8
Proofreaders	5
Copyholders	4
Editorial Work	2
Stenographers	2
Foreman	1
Salesman	1
Bookbinder	1
Reporter	1
Decorator	1
Writer	1
Secretary	1
	46

Brooklyn Evening Trade School

There are five courses offered for printers in the Brooklyn Evening Trade School; two courses in composition and press-work; two courses in the care and operation of the linotype and one course in proofreading. At the time of the survey 95 men were enrolled in these classes. Their occupations follow:

Composition and Press Work
(2 classes)

Apprentices	20
Helpers	5
Feeders	4
Pressmen	3
Clerks	3
Journeymen	2
Two-thirders	2
Copyholders	2
Linotype Operator	1
Machine Hand	1
Errand Boy	1
Stock Clerk (Printing)	1
	45

Linotype Work
(2 classes)

Compositors	16
Apprentices	10
Two-thirders	4
Linotype Operators	3
Proofreaders	2
Helpers	2
	37

Proofreading
(1 class)

Copyholders	4
Journeymen	2
Two-thirders	2
Apprentices	2
Printing Salesman	1
Clerical Work	1
Cutting Machine Worker	1
	13

Elementary Evening School No. 95, Manhattan

There is one class in printing at this school. The twelve pupils in attendance gave their occupations as follows:

Apprentices	7
Errand Boys	3
Barbers	2
	12

The numbers enrolled in each of the evening trade extension classes in printing were so small that it was economically impossible to obtain an organization of classes based on the previous trade experience of the applicants. No one class in printing in the evening schools was made up entirely of apprentices, two-thirders, feeders, pressmen or journeymen compositors. In only two classes was an attempt made to plan the course of study to meet the needs of special groups of workers.

The equipment provided in most cases was so limited that the work was necessarily very elementary in character. No courses were maintained for printers in English, cost estimating, mechanics, typographical design, color work, chemistry or the theory of magazine and book web presswork.

Little evidence was found that the employers' associations or unions were co-operating with the school authorities in developing practical or related courses.

SCHOOLS MAINTAINED UNDER PRIVATE AUSPICES

School for Printers' Apprentices

The School for Printers' Apprentices of New York was organized as a co-operative school January 1, 1913. It is managed and financed jointly by Typographical Union No. 6, the Employing Printers' Section, New York Branch of the American Newspapers Publishers' Association and the Hudson Guild, a social settlement at 436 West 27th Street. The Union contributes $2,000, the Employers a like sum and the Guild $1,000 and rent for the maintenance of the school each year. A Board of Directors, consisting of four members from each of these bodies, determines the policy of the school.

Registered apprentices who have had at least one year's previous experience in printing offices are eligible for admission.

The object of the school is to instruct only those who have shown a determination to make printing their vocation. Both day and night classes are conducted at the school. Over 100 employers in the city permit their apprentices to attend two hours of one afternoon each week, on the employer's time, with the proviso that the apprentice will attend one night each week on his own time. There are at present 346 pupils enrolled in the school. All branches connected with the composing room are taught in the school except machine composition. English composition, spelling, grammar and punctuation are also taught as supplemental to the apprentices' needs.

A new equipment costing $6,000 was recently contributed to the school by men interested in printing. This equipment is not excelled in point of efficiency by that of any plant in the city.

Newspaper Pressmen's School

Realizing the need for technical courses for their members, the officials of Newspaper Printing Pressmen's Union No. 25 established a school at the union headquarters in the fall of 1916. This school was open from September until March. Two hundred members of the union availed themselves of the opportunity to secure technical instruction relating to their daily work. The course of study included lectures on types of presses, methods of printing, chemistry of inks, rollers and paper, mathematics through mensuration and the simple mechanics of cams, levers, screws and gears.

The courses were offered four afternoons a week for the night workers and an equal number of evenings a week for the day workers. On account of the limitations of room and the number demanding instruction, it was found necessary to limit the attendance of each class to one afternoon or one evening a week.

Employing Printers' School in Estimating and Cost Finding

A course in estimating and cost finding is maintained by the Association of Employing Printers. This course was started several years ago by the Typothetæ of the City of New York and was taken over by the Association of Employing Printers when the Association was organized. There are 67 men enrolled in this class, which is made up of employers' salesmen, office men,

foremen, journeymen and apprentices. The course consists of fifteen lessons of three hours each. The classes meet twice a month from 6:30 to 9:30 o'clock. Home work is required of each pupil. On account of the limited facilities at the Association Headquarters it has been found necessary to refuse a large number of applicants. A fee of $15 is charged for this course.

The West Side Y. M. C. A. School of Printing

The circular issued by the Y. M. C. A. gives the following information concerning this school:

"The Y. M. C. A. School of Printing is maintained to assist ambitious boys and to provide competent workmen for the printing industry of New York City. It is closely connected with the printing trade through an Advisory Committee composed of ten employing printers well known in the city.

"Enrollment in the school is open to shop apprentices only, whether employed in composing or press rooms, or whether employed in closed or open shops, and irrespective of religious affiliations.

"Each apprentice is expected to spend either one morning (of four hours) per week of his employer's time at the school, this to be devoted to actual work of composition or press work. In addition, he is expected to spend two evening sessions (of two hours each) per week on his own time, this to be devoted to academic study along lines applying particularly to his work.

"The enrollment in the school is made through the boy's employer, sometimes by part payment by the boy, and sometimes entirely by the boy's parents."

The tuition fee is $50 per annum.

At the time of the survey twelve boys were enrolled in this school.

Pressmen's Correspondence Courses

The International Printing Pressmen's and Assistants' Union has developed correspondence courses for its members. This course was established in 1911 and is given by the school maintained by the Union in Tennessee.

Courses are offered in platen press work, cylinder press work, rotary press work and planographic press work. These courses include the study of the various types of presses, mechanical adjustments, methods of make-ready, underlaying, overlaying, study of inks, rollers, papers and blankets.

These courses are considered by many printing authorities as being the best courses offered in presswork and have been a great help to the pressmen who have taken them.

The price of each course is $5 and the deficit incurred is paid by the union.

There are 88 pressmen in New York City taking these courses.

Thirty-five pressmen have graduated from these courses.

International Typographical Union Correspondence Course

The I. T. U. course in printing was developed and perfected in response to a demand voiced at the annual meeting of the Union in 1907. A commission was appointed to develop the course of study, and after careful consideration of the problem decided that a course should be given by correspondence. The course of instruction was developed by the Inland Printer Technical School in Chicago. Local secretaries have been appointed to assist in developing the courses.

There are two courses offered, one in hand lettering and principles of typography and the other on capitalization, punctuation and other elementary typographical principles. The first course consists of thirty-seven lessons on lettering, design, color harmony, composition, hand lettered advertisements, layouts of booklets and books, paper making, plate making and imposition. The second course consists of nine lessons on punctuation, use of capital letters, proofreaders' marks and their meanings and type faces and their uses. The course in lettering, design and principle of typography costs $25 and the course in capitalization, punctuation and elementary typographical principles costs $10. The International Typographical Union gives a prize of $5 in the form of a rebate to each student who finishes the full course, but not to those who take the short course only.

At the present time there are 234 students in New York City taking the above courses. Seventeen students in the city have graduated from the course.

The Baron de Hirsch Trade School

The Baron de Hirsch Trade School conducts a day class in printing covering five and one-half months. The equipment consists of a composing room and five job presses. Instruction is given in composition, imposition, presswork and printing shop practice. The average number of graduates, each six months, since the course was instituted in June, 1913, has been eighteen.

The New York Trade School

The New York Trade School conducts an evening class in job composition and presswork. The class meets three evenings a week for a period of six months. The course is arranged for young men of from 17 to 25 years of age, who are either engaged in the trade or are beginners. The tuition fee is $14. The enrollment for the past year was twenty students.

Other Schools

In addition to the above mentioned agencies there are three private trade schools offering courses in linotype and monotype operating. Courses are also given in linotype and intertype operating at the New York factories of the companies which make these machines. The instruction is limited to representatives from plants in which these machines are used.

RESOLUTIONS ADOPTED BY CONFERENCE COMMITTEES

EMPLOYERS' COMMITTEES

When the findings of the survey were completed, they were submitted to the conference committees appointed by the Association of Employing Printers and Master Printers' Association and the following resolutions were adopted by the committees:

1. With the exception of a few minor points* the committee approves the facts as represented in this report.

2. This committee recommends that the Board of Education establish a Central School of Printing and consolidate in it all printing equipment now used in the three day vocational schools and the evening trade schools. With the limited facilities now provided in each of these schools, it is impossible to secure sufficiently large numbers of students to allow them to be grouped according to their previous training and experience. The Central School would give an organization large enough to enable the teachers to grade the pupils according to their rank in the grade. It would also give a large enough organization to provide for special teachers for special subjects. The committee heartily endorses the recommendation of the establishment of a Central School of Printing.

3. In order to make the school more effective, the committee recommends that a special advisory committee of nine members be appointed to assist the Board of Education in developing this school, and that such advisory committee be made up of four representatives from employers' associations, four from labor organizations and one other member; such committee to be

*These items were later modified in accordance with the view of the committee.

appointed by the Board of Education. This committee should be given liberal powers over the school, such as providing courses of study, checking up the work of teachers to see that the work meets the practical needs of the trade, to assist in selecting of equipment and in giving examinations from time to time to determine the fitness of the boys who enter the trade.

4. The City of New York now owns the old Wynkoop-Hallenbeck Building. This committee strongly recommends the setting aside of the four upper floors of this building for the Central School of Printing. This building is well lighted and was used by printers for a number of years. There are about 12,000 square feet of floor space on each floor. The committee recommends that the upper floors of this building be remodeled and put in first class shape for the School of Printing.

5. The committee recommends the continuing of a two-year day vocational school course, such course to be open to any boy 14 years of age who has completed the grammar school, or who is in the 7th or 8th grade, and recommends that preference to enter the printing classes be given to applicants who have completed the work of the elementary school.

6. This committee recommends that in selecting apprentices, the employing printers in New York City give preference to the graduates of the Central School. The committee feels the need for the day school training, not with the idea of turning out more apprentices, but with the idea of training boys so that they will make better apprentices.*

7. The committee recommends that the City equip this school with modern print shop equipment. The industry is changing so very rapidly that it is impossible to use equipment that was con-

* At the conference at which these recommendations were adopted, the committee assured the members of the survey staff present that every graduate of this school would be taken care of in the office of members of the association, and promised the hearty support of the Association of Employing Printers in placing the graduates of this school. They also stated that they would be very glad to give the boys who graduated from this school, who show unusual ability, a higher rate of compensation than is paid to the boy taken on from the regular grammar school or from the streets.

sidered up-to-date a few years ago. The only way to demonstrate to the printers in New York that the work of the day vocational school is worthy of consideration is by installing a modern equipment whereby the boys can learn the best practices that are in use in the modern composing and pressrooms.

8. This committee recommends that the Board of Education establish continuation classes for all boys who are apprentices in the printing trade. They strongly urge as a committee that the members of their association send their apprentices to this school for four hours per week with pay, with the understanding that the boy is to attend two nights a week on his own time. The committee believes that this course should be maintained for two years, that is, during the boy's first and second year apprenticeship. They recommend that courses be given in English, proofreading, display composition, drawing, arithmetic, theory of presswork, mathematics and mechanics and care and operation of presses.

9. This committee heartily recommends the establishment of evening classes in the Central School for the printers who are engaged during the day, and the establishment of afternoon classes for printers who work at night. The committee feels that this is the big problem in vocational training for the printers and recommends the following courses:

1. English.
2. Proofreading.
3. Lettering.
4. Color Harmony and Design.
5. Hand Composition.
6. Book Composition.
7. Linotype and Intertype Operating.
8. Monotype Operating.
9. Imposition.
10. Arithmetic for Compositors.
11. Estimating and Cost Finding.
12. Mathematics and Mechanics for Pressmen and Feeders.
13. Courses in the Chemistry of Inks, Rollers, Blankets, etc., for Pressmen.
14. Courses in Platen Presswork, including the Care and Operation of Automatic Feeders.
15. Courses in Theory and Practice of Cylinder Presswork.
16. Courses in Theory and Practice of Magazine and Book Web Presswork.
17. Courses in Theory and Practice of Offset Presswork.

18. Courses in Underlaying, Overlaying, etc.
19. Courses in Color Work for Pressmen, including the mixing of inks.
20. Courses in Electricity for Printers.

10. The committee also recommends that a registration fee of $2 be required of all journeymen who desire to take extension courses. That such fee shall be returned upon the completion of 75 per cent. of the full attendance.

11. The committee recommends that an Exhibition Room be provided in this school; such room is to be used in exhibiting the best examples of printing produced in New York City and outside of the City. This could be used to good advantage in teaching the young men coming into the trade the possibilities of quality printing.

12. The committee also recommends that quarters for a reading room be provided for the men who wish to come to the evening school to attend classes. A large number of men in the printing trade work in New York and live in the suburbs and many of these men will undoubtedly make it a practice to stop off at the school for afternoon or evening classes. The committee urges that comfortable quarters be provided for these men, either in the form of a reading room or library.

13. The committee also recommends that in the matter of the examinations for the men who wish to teach in this school the advice of the advisory committee be sought. It is hardly necessary to state that this committee strongly urges the employing of men who have had exceptional training in the trade.

Finally, the committee feels that the printing industry in New York is so large that the problem can be handled more efficiently in a modern, well equipped Central School of Printing.

The committee heartily endorses all the recommendations made and promises the hearty support of their organization in carrying out the above suggestions.

UNION COMMITTEE

The findings were also considered by the conference committee appointed by the Allied Printing Trades Council and the resolutions below were adopted by the committee. These resolu-

tions were subsequently brought before the following organizations in business meetings and were approved and adopted by them: Typographical Union No. 6, New York Printing Pressmen's Union No. 51, New York Newspaper Web Printing Pressmen's Union No. 25, Franklin Union No. 23 and New York Job Press Feeders' Union No. 1.

WHEREAS, At the request of Organized Labor's Conference Committee on Industrial Education the Board of Estimate and Apportionment of the City of New York appointed a committee to conduct an industrial education survey to determine the need of vocational training in the City of New York;

WHEREAS, The report of the committee shows that there is a need for vocational courses in printing in the City of New York, this Union recommends:

1. That the Board of Education establish a Central School of Printing and consolidate in it all the printing equipment now used in the three day vocational schools and in the evening trade schools.

2. That the Board of Education secure the four upper floors in the old Wynkoop-Hallenbeck building for the School of Printing. This building is located at the New York end of the Brooklyn Bridge and is an ideal location for the proposed school. The old Wynkoop-Hallenbeck building now owned by the City was formerly occupied by printers and is well adapted to the needs of the School of Printing.

3. That the Board of Education continue the two year day vocational course in printing; that such course be open to any boy 14 years of age who has completed grammar school or who is in the 7th or 8th grade. This committee also recommends that the attendance at the day school be limited to 300 boys. (As the trade normally absorbs about 400 boys a year the limit of the day vocational school to 300 boys will safeguard the trade inasmuch as the graduating class of any one year will never exceed 100 or 150 boys).

4. That the Board of Education establish part-time industrial classes for all first and second year apprentices in the printing trade. This committee also recommends that the employers send their apprentices to this school for four hours per week with pay with the understanding that the boy is to attend two nights a week on his own time during the 3rd, 4th, and 5th years of his apprenticeship training. That courses be given in English, proofreading, display composition, drawing, arithmetic, hygiene and civics for the composing room apprentices and theory of presswork, mathematics, mechanics, hygiene, civics and the care and operation of presses for the press room apprentice.

5. This committee heartily recommends the establishment of day and evening classes in the Central School of Printing for men and women engaged in

the printing trade. The committee recommends the establishment of the following courses:

1. English.
2. Proofreading.
3. Lettering.
4. Color harmony and design.
5. Hand composition.
6. Book composition.
7. Linotype and Intertype operation.
8. Monotype operating.
9. Imposition.
10. Arithmetic for compositors.
11. Estimating and cost finding.
12. Mathematics and mechanics for pressmen and feeders.
13. Courses in the chemistry of inks, rollers, blankets, etc., for pressmen.
14. Courses in platen press work, including the care and operation of automatic feeders.
15. Courses in theory and practice of cylinder press work.
16. Courses in theory and practice of magazine and book web press work.
17. Courses in theory and practice of offset press work.
18. Courses in underlaying, overlaying, etc.
19. Courses in color work for pressmen, including the mixing of inks.
20. Courses in electricity for printers.

6. That the Board of Education require a registration fee of $2.00 of all men and women in the trade who desire to take extension courses in the afternoon or evening classes; that such fee shall be returned upon the completion of 75 per cent of the course.

7. That the Board of Education appoint a special advisory committee of nine members to assist in developing the School of Printing, such advisory committee to be made up of four members representing employers' associations, four representing labor unions, and one other member. That the Board of Education consider the recommendations of this committee on the following points:

1. Courses of study.
2. Training and experience of teachers.
3. Character of equipment.
4. Examination of pupils from time to time to determine their fitness to enter the trade or continue at the trade.

8. That the Board of Education provide an exhibit room in the Central School of Printing, such room to be used for exhibiting the best samples of printing produced in New York City and elsewhere.

9. That the Board of Education provide a modern up-to-date library and reading room for the men who attend the School of Printing.

ENDORSEMENT OF INTERNATIONAL PRESIDENT

A copy of the Printing Report was submitted to Mr. George L. Berry, President of the International Printing Pressmen and Assistants' Union of North America. Mr. Berry's comment upon the report is below:

INTERNATIONAL PRINTING PRESSMEN AND ASSISTANTS' UNION OF NORTH AMERICA
OFFICE OF THE PRESIDENT

Pressmen's Home, Tenn.
June 1, 1917.

Mr. Lewis A. Wilson, Director,
Industrial Education Survey,
49 Lafayette St., New York, N. Y.

My Dear Mr. Wilson:

Your Committee in charge of the Printing Survey made in New York City has been kind enough to submit to me a general outline of the work accomplished, and to this work I have given careful consideration.

In the first instance the principle underlying the program of research in Graphic Arts was correct and exemplified the new thought that is gaining ground throughout the world, wherein trade education is recognized as being important to the welfare of employer, employee and to society as a whole.

As a printer I can best pass upon the value of that part of the report dealing with the pressrooms of the newspaper and commercial offices, and to this part of the report I have given especial attention. It is a splendid accomplishment; it embodies the assembling of facts that can be grasped quickly. It will do much in the promotion of a better understanding of the trade, and it moreover will do much in bringing the interest of the trade into a more harmonious relationship.

The International Printing Pressmen and Assistants' Union maintains its Trade School; it believes in improved craftsmanship. It aspires to the highest conception of printing. It therefore is in full accord with the splendid recommendations growing out of the review and survey that has been made by the Committee in charge of this work in behalf of New York City. Our endorsement, therefore, is unqualified, and we are in hopes that the successes so far attained will meet a happy reception from the Board of Estimate of New York City to the end that the permanency of the recommendations may be assured.

Very respectfully yours,

GEORGE L. BERRY,
President.

ENDORSEMENT OF OFFICER OF THE NEWSPAPER PUBLISHERS' ASSOCIATION

Mr. Lewis Wilson, Director,
Industrial Education Survey,
49 Lafayette St., New York.

Dear Mr. Wilson:

I have read with interest the report on the printing trade, and heartily endorse the recommendations made by the committee appointed by the Association of Employing Printers, and the resolution adopted by the Printing Unions.

The development of a central school of printing will give New York City an institution that will adequately meet the needs of the printing trade in this city. The advantages of such a school are very clearly outlined in the report.

Very truly,

DON. C. SEITZ,
Chairman, Conference Committee
Newspaper Publishers' Association

REPORT OF ADVISORY COMMITTEE

The special advisory committee upon educational provisions for the printing trade, after giving a large amount of time to the consideration of the findings, submitted a report emphatically recommending the establishment of a Central School for the printing trade.

Among other arguments the committee present the following: "At present no school is large enough or important enough to organize its courses of instruction so as to comprehensively meet the demands of the trade. Such courses could be provided in a Central School of Printing. The need for such a school is urgent. Its advantages over the present scattered courses of instruction are numerous and unquestionable. Some of the more important of these are as follows:

"In the first place, a central school of printing permits certain economies in administration not possible in schools of other types.

"The success of a vocational school depends to a large degree upon the co-operation of the three parties vitally concerned in the problem, i. e., the employers, the employees and the school authorities. The employing printers' associations and unions have recommended the establishment of a central school of printing. It is evident that both employers and employees will show great interest in such a central school, and will co-operate with it in many useful and important ways. They will look upon it in a sense as *their* school, and it will mean much more to them than if a number of courses in printing were given in departments of several schools.

"A central school of printing, with its extensive and complete equipment, would attract and hold the interest of men in the trade who under present conditions do not care to attend the schools in which the equipment is scanty and of poor quality.

"A central school would permit a considerable variety of courses; unit courses, graded courses, advanced and specialized courses in trade subjects, etc., such as cannot be given in the present schools. The printing industry in New York City has enough workers easily to provide a sufficient number of students for such a central school.

"A central school of printing could not only organize courses in different subjects, but it could organize separate courses for persons of different ages or ability; courses for apprentices, for the two-thirders, for the journeymen and for the foremen. The separation of trade pupils into such natural groups would add greatly to the efficiency of the instruction. A sufficient number of students of the various grades would be available in a central school to permit such separation. This is impossible in the present schools because of lack of numbers.

A central school of printing, because of the variety of its equipment and the specialized skill and ability of its various teachers, could more readily and effectively adapt its courses to the changing needs of workers than is possible in the departmental type of school. The active co-operation of an advisory committee of the kind that a central school could readily secure would serve to keep the instruction in close accord with the technical requirements of the workers.

"With its staff of expert teachers, each a specialist in his line, a central school should do much to maintain high standards of printing in New York City. With such a staff the school might effectively serve both the city and the industry as an experimental trade laboratory."

In regard to the relation existing between a central school and day vocational courses the committee makes the following statements:

"The vocational training of young persons who desire to enter the printing trade will represent a relatively small part of the total work of a central school of printing; but such a central school could contribute decidedly to the efficiency of such vocational work. The advantages of a central school in this connection may be summarized as follows:

"The facilities provided in a central school will be large enough to give boys a thorough training in the fundamental principles of the trade in modern, well equipped shops. The equipment now provided for the print shops in the vocational schools is inadequate for this purpose. The committee appointed by the employers' association emphasized the need of a modern, up-to-date equipment so as to give the pupils enrolled in the pre-employment classes an appreciation of a well equipped shop.

"The number of pupils enrolled in a central school of printing would be large enough to permit grading them according to their previous school training.

"This large number will make it possible to provide an organization with special teachers for at least the following departments:

(1) Department of Typography.
(2) Department of Presswork.
(3) Department of Applied Art.
(4) Department of Related Studies.

"It is not economically practicable to secure such a differentiation in the printing departments of the vocational schools as at present organized. The organization in such schools, as a rule, is not large enough to differentiate even between the presswork and the composing room work. In the Murray Hill and Brooklyn Vocational Schools the instructors of printing teach both pressroom and composing room work. It is still more difficult to develop special courses in design and other important allied subjects in printing departments where the total numbers enrolled are small."

In dealing with the need for additional trade extension courses the committee makes the following points concerning the value of a central school for such work:

"The committee appointed by the employers' associations and unions heartily recommend the establishment of evening trade extension classes for printers who are engaged during the day and afternoon trade extension classes for workers who are employed at night. This Committee believes that such classes present the largest opportunities for vocational education in the printing trade. There are 27,000 trade workers engaged in the composing and pressrooms in New York City. The printing trade is becoming more and more specialized, and as a result the trade is not self-instructing. An important part of the training of the workers must come through outside agencies. The advantages of a central school for this type of training may be summarized as follows:

"1. An equipment large enough to offer both elementary and advanced shop courses.

"2. Trade workers would attend who do not care to attend a school in which the equipment is not comparable in quality to that of the commercial shop.

"3. A student body large enough to be graded according to previous trade experience.

"4. Numbers which would make it possible to offer many courses not practicable at the present time.

"5. The equipment and teaching staff could be used for both afternoon and evening trade extension courses. This arrangement would demand a staff of expert trade teachers who would give full time for certain periods to teaching.

"6. The men in the trade would have a personal interest in the central school of printing and the efficiency of the school would be increased by the exchange of ideas and social intercourse of a large group of trade workers.

"7. The higher possibilities of the trade could be emphasized in such a school by lectures on trade processes, new machinery and allied subjects, and by exhibits of various types of printing showing the possibilities of quality printing.

"8. Both employers and employees recommended the establishment of part time classes for the first and second year apprentices in the trade. This situation can be met adequately by a central school of printing.

"9. Eighty-seven per cent. of the 27,000 composing and press-room employees work in the Borough of Manhattan. Most of these work in offices located below 44th Street. A central school of printing located at the lower end of Manhattan would be conveniently located for these men and courses could be offered at hours to meet their needs."

In summing up the situation the Committee quotes an employing printer as follows:

"The quality and effectiveness of printing depends to a large degree upon the ability of the workers. If New York City is to retain its leadership in the printing world steps must be taken to provide training for the workers in the trade. The comparatively small investment required to give New York a thoroughly effective school of printing will bring substantial and constant benefits to the city."

In the report of the advisory committee on day vocational schools the following paragraph concerning a central school for printing appears:

"In regard to the school organization best fitted for such training (pre-employment training) they (the committee) believe that in the case of printing the instruction should be given in a central school, for the reasons that more complete equipment and a more comprehensive teaching organization can be so secured, greater co-operation with the industry is possible and better control could be had over the numbers entering training in relation to the needs of the trade."

RECOMMENDATIONS OF THE SURVEY COMMITTEE

With the complete findings and the recommendations of the conference and advisory committee before them, the survey committee gave extended consideration to the problem of school provisions best fitted for the needs of the printing trade. During this consideration the committees of the Association of Employing Printers and of the Allied Printing Trades Council, as well as some of the members of the advisory committee on day vocational school, were called in conference. The deliberations of the survey committee issued finally in the following resolution:

"This committee recommends the establishment by the Board of Education of a central school of printing which shall provide trade extension courses for journeymen and apprentices and all day pre-employment courses for youths intending to enter the trade, and that such courses take the place of the instruction in printing at present carried on in the day vocational schools and evening trade schools."